

ROOT & STEM

AI Emchaag: Mno-eyaa'ing Cybersafe

GEGO MEMKAAJ BZINKEN

Gaa zhitood

AANJTOONGAK
IW TECHNOLOGY

Aanish Nake Ezhi Aansem-
gak iw Language Revitalization

SOCIAL ROBOTS GE
WIIDOOKAAZWAAD BIMAADZIYIN

Bekaanak gezhi kidyan
gaawiin niin to cyberbullying



Mii dash mazinibii'igaade-mazina'iganan, odamino'iganan zhidwa
midaaswi mazina'iganansan zhi-aabajitood gikino'o'amaadiiwigamig





PINNGUAQ BIMAADIZIWIN

Pinnguaq aabajitoowag iwe bimaadiziwin
zhi-wiiji'aawaad apii awiya gaa-
gikino'amaagozid. Niinawind ngagwe-
wiiji'ayag gakina awiya zhi-minochigwaad.

...

Giishpin noonde-gikendang aaniin enakamigak, mawadishiwen imaa

pinnguaq.com

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ROOT & STEM

PINNGUAQ E AAWID

Gchi wiidookaazwag eta giw Pinnguaq Association miigo eta wiidookwaawad iw STEAM ji mno dbaajimowaad, mno bimaad-iwaad, ji mno yaawaad minwaa gi maaigiigwaad odi endaawaad. Wminendaan ow Pinnguag miigwed ji wiidookwaad noji wiyan.

DIGITAL MOWNDOKAAJIGANAN

Gaawiin eta coding owzi noon iw Computer Science Education. Kina e kendjaadeg nake ge e chigeng ge nake ezhi wiingezwyin pii kina aabjichgaadeg niw e maadanmon. Dowaabdon niw icons niisi'ing etaamgak.



NAKE EZHITCHGENG



COMPUTING AND NETWORKS



GEGOON EZHKONMON



TECHNOLOGY AND SOCIETY



EZHITOOD

The Government of Canada gaa-wiijii'iwed niin dash wiin Pinnguaq Association zhi-izhichigeyaan owe mazina'iganens.

Root & STEM zhibbiigaademgad Forest Stewardship mziniganing, ji shkonmaageyaang iw aki.

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of Canada

Commissionat
à la protection de
la vie privée du Canada

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BY cira

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zhitchigaademgad niizhing giw

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Nicholas Davies

Ezhnaagak ge Ezhiwesing

Stephanie Amell, Emily Canfield, Kelly Eng,

Mariana Fernandez, Alyssa Rowe

Ntam Mzinaazigsan

Kiley Fediuk

Mzinbiigechigan

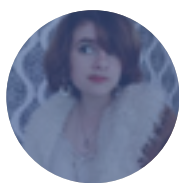
X-ing Design

Gaa Wiidokaaswaad

Rajen Akalu, Ayesha Akhlaq, Sharon Aschaiek,
Tanner Big Canoe, Sheena Bolton, Micaela
Dawn, Nia Emmanuel-Briggs, Alina Eyamie,
Chelsea Kowalski, Aidan Mackey, Brian
McLachlan, Sofia Osborne, Callum Penny,
Chloe Phillips, John Stewart, Richard Van
Camp, Julia Young



Maadiesinang @Pinnguaq



KILEY FEDIUK

Niigan-mazinibii'igewin

Kiley Fediuk izhinikaazo Wiisaakode-ikwe gaa-omazinibii'iged zhiigwa Alberta onjii. Gii-gikinaamaagozid zhi-mazinibii'iged imaa Pixel Blue College imaa Edmonton, Alberta. Ojiikendaan apii mazinibii'igewinan 1960's zhiigwa 1970's gakinga gegoo omaa skiing zhiigwa nojigo-inendaman apii. Giishpin gaawiin gegoo dazhiikang, mazinibii'ikanan ozhibii'ige zhiigwa omaawajitoonan gitochigen-san. Geyaabi gidaawaabandaan imaa [@frogsndaydreams](#).



RAJEN AKALU

Gaagwenjimindwaa zhibiigewaad: Ezhaamgak iw Artificial intelligence • 6 mzinigan

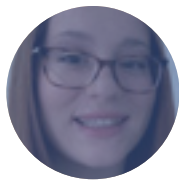
Kinoomaagan aawi ow Rajen Akalu odii kinoomaage Business and IT odii Ontario Tech University odii Oshawa minwaa wgii mkaan Akalu Law Professional Corporation. Gtaamgozi ge emnendang iw gdaaknigaade minwaa ge wiidookaagyin iw law and technology.



SHARON ASCHAIK

Social Robots ge wiidookaazwaa bimaadziyin • 7 mzinigan

Sharon Aschaiek, gaa-niigaanishkang gikinoo'aamaagewigamig imaa Higher Ed Communications, odoozhibii'aan oshki-aya'ii gaa-gikendamowaad. Wdi aabjitoon giigdownin ge zhibiigewin ji wiindamaaged shki naak-nigewin ge shki kinoomaagewnan eyaamgak.



JULIA YOUNG

Gaazhi maaajtaamgak iw Online Learning • 10 mzinigan

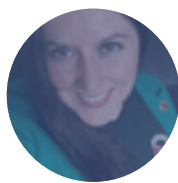
Wminendaan ow Julia Young noji go naajimod minwaa wiidookaazo odii Ontario's English and Russian-language -speaking communities. Noogom dash neyaab kinoomaagewgamong gii zhegiwe wii kendang iw Russian ge wii nokiid aabjitoon iw audio-based and digital content creation.



CHLOE PHILLIPS

The Web • 12 mzinigan

Nsing aazhi yaa odii Trent University ow Cloe Phillips mii odii kinoomaagzid iw environmental studies and education. Wminendaan bmosed ge kojiing yaad wiinwaa wdyan, minwaa wdi mnendaan niizhotoon iw social justice ge environmental education.



SHEENA BOLTON

Aabjitoon iw Cybersecurity Omaa Kinoomagegwamik Aachkingan • 15 mzinigan

Baabaasondib owi ow Sheena Bolton of the K-12, Cyber Titan, minwaa Cyber Education Initiatives odii Information ge Communications Technology Council.



BRIAN MCLACHLAN

Gidaa-izhitood na gegoo aapiji zanagang zhi-gikendang? • 20 mzinigan

Brian McLachlan ow emzinbiiged omaa *Complete the Quest: The Poisonous library*, ge RPG/graphic novel combination an *Draw out the Story: Ten Secrets to Creating Your Own Comics* Kinomaage nake ge ji zhitooyn ge giin omaa [Deep Thought Ballon YouTube channel](#).



RICHARD VAN CAMP

Ikwewimanijoosh • 22 mzinigan

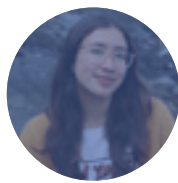
Richard Van Camp onji Fort Smith, Northwest Territories. Tlich Dene awe. Aapiji nitaa-ozhibii'ige. Azhaa gii-ozhibii'ige niishtana shi niizhwaaso mazina'iganan. Aapiji minwaa-jimo zhiigwa o-noonde-wiijii'aan bakaan awiyaag zhi-gikendamowaadmiinawaa mashkikiwan. Gdaa zhaa odii social media: [richardvancamp.com](#).



MICAELA DAWN

Ikwewimanijoosh • 22 mzinigan

Micaela Dawn aapiji nitaa-mazinabii'ige. Wii-noonde-daazhiikan zhi-minosed gakina awiya bezhigwan. Aapiji ojiikendaan iwe mazinibii'iged. Iwe gaa-izhitood zhi-zoongi-naagwad.



SOFIA OSBORNE

Aanjtoongak iw Technology • 26 mzinigan

Sofia Osborne ayaa imaa Vancouver gaa-izhinikaadeg. Nitaa-anokii; ozhiibii'ge, debaajimo zhiigwa zhi-bizindaaman gegoo. Gdaa waabdaan gaa zhiyang omaa *The Tyee* and *The Narwhal*, minwaa wdi wiidookwaas niw *Beyond Blathers* an Animal Crossing science podcast.

Ezhaamgak iw Artificial intelligence

Wdi dowaabdaan ow Root & STEM nake ezhi kendaasod ow artificial intelligence (AI) minwaa nake ezhi wiindmaaged nake ji gwedwed, ji dbaajimod, minwaa ji kinoomaaged ji aabjitooyin iw aabjichgan ge ji kowaabdizyin. Based on research funded by the Ontario Principals Council on AI, niibwa tenoon omaa mzinigning gezhi kowaabdizyin pii kinomaageyin ge kinoomaagziyin. G'gaa mkaanaawaa ge gaa kidwaad giw ge gaa mzinbiigewaad giw kinoomaagnag ge emzinbiigewaad ge AI emyaa kenjigewaad endowaabjigewaad niw edjindmeg. Nake ge ji wiidookaagemgak iw AI technology megwaa wiyya kinoomaagizid. Mii nake gezhi nookiimgak iw AI pane minwaa nwii dowaabdaamin nake ezhi nookiimgak iw AI minwaa ngaa gnoondimin nake gezhi aabjitooyang iw aabjichgan gi mno kowaabdizyang omaa aking.

Wegonen iwe Nibwaakaa'ikaan? Aaniin izhi-aabajitooyan? Daabidaa Nibwaakaa'ikan aanjise magad. It references the congruence of a number of different technologies. Essentially, it uses predictive modeling and data analysis in order to have machines do things that humans can do—or have been doing until now. Noongom dash, gakina awiya aabajitoowag Nibwaakaa'ikaan gaa-izhichigewaad zhi-bimaadiziwaad. Dabishkoo, awiya gaa-giiged waa-aabajitood Nibwaakaa'ikaan zhi-mikang iwe manidooshiwaapine. Mii wenji zhi-aabajitooyan Nibwaakaa'ikaan aaniin ezhise g aakoziwin. Daabishkoo Nibwaakaa'ikaan zhi-aabajitoyan imaa odaabaaning zhi-minosed iwe mayaajibizod gemaa zhi-wiindamawikwaa aandi gwayak zhi-bimibizoyan.

Maagizhaa awiya zhi-naagadendamang giishpin baataa'idizowin apii gaa-aabajitooyan Nibwaakaa'ikaan?

Apii gaa-izhitooyan Nibwaakaa'ikaan, gwayak zhi-doodaman gemaa gaawiin wii-minosesinoon iwe. Mii dash wenji wii-baataa'idizowin iwe Nibwaakaa'ikaan. Mii dash wenji gaa-nanaandawi-gikenjigewaad gwayak zhi-odoonaabandawaad apii ozhitoowaad Nibwaakaa'ikaan onaabaabandaniwinan. One example of human bias is racial profiling, which involves dangers like the creation of facial recognition models that detect only certain ethnic or racial features based on biased training data. Imaa Ontario Tech University nindanokii, ngikendaan weweni zhi-izhichigeyaan apii wiidanokiimagwaa awiyag. Aapiji betag giishpin aabajitooyan Nibwaakaa'ikaan, ndikid.



Gakina gegoo gaa-izhichigewaad, dabishkoo desabiwinan, makizinan, mii iniwe onaabaabandaniwinan bebakaan awiyag wii-aabajitoowaad. Gagwedwewinan noongom: Awenen waa-izhichigewaad onowe? Wegonen waa-inakamigak? Inakonigewin odayaawaa zhi-gagwe-odoonaabandawaad zhi-wendang nisidotawaad. Weweni aabajitoon owe Nibwaakaa'ikaan Gegoo bebakaan-daagwan zhi-gichi-nagadendaman gwayak zhi-naa'itooyan iwe gaawiin gaa-minosesinoon. Apii Nibwaakaa'ikaan anjise g, iniwe inakonigewinan waa-anjise waad gaye. Zhi-gweyak-atooyan nizho gaa-zanaggiwinan. Onzaamiiniwan gwayak-izhichigewinan.

Aaniish waa-aabajitooyaang Nibwaakaa'ikaan zhi-minoseg?

Apii gaa-maajitooyaang Nibwaakaa'ikaan, niibowa gii-aanjise g miziwekamig. Niibowa gii-aanjise g nanaandawi-gikenjigewin zhi gwa izhitoowin. Nibwaakaa'ikaan, dabishkoo bakaan aabajichiganan, daabidaa gwayak zhi-aabajitooyan. Most technological development comes with a certain amount of risk, especially regarding user privacy. Gaawiin giwii-dabazisii owe. Daabidaa baataa'idizowin ayaamagad gakina gegoo. Dabishkoo apii izhaayan odaabaaning, maagizhaa wii-minose, maagizhaa gaawiin wii-minosesinoon. Ozhiitaan zhi-minoseg izhichigeyan. Zoongan owe Nibwaakaa'ikaan mii dash maagizhaa wii-minoseg. Ganabach wii-minose zhi-aabajitooyang. Gaawiin aapiji ginoonde-debweyendanziin. Technologies are human artifacts and should be regulated as such. Aabichiganaabikan gikendaasowin ogikendaanaawaa aaniish zhi-mikamowaad naabizhiganan zhi gwa wiindaamoo'gaadewinan. Aazha, mii eta. Gego aabajitooken Nibwaakaa'ikaan dabishkoo awiya bimaadizid. Gaawiin Nibwaakaa'ikaan odayaanziin debwe nibwaakaawin. Niinawind dash wiin nibwaakaawin ndayaamin mii dash noonde-aabajitooyaang owe daabida.

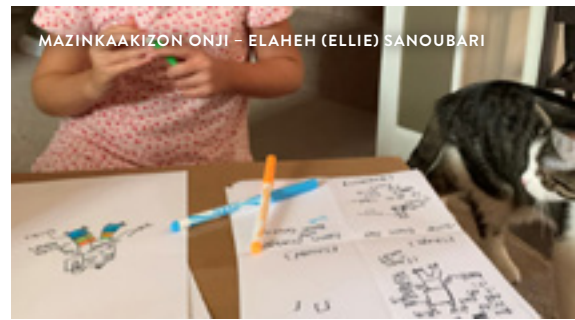
— DR. RAJEN AKALU



Social Robots ge wiidookaazwaad bimaadziyin

Elaheh Sanoubari gaa kinoomaaged nake
gezhi ji wiidookwaad niw ekinomaagzijig
nake ge ji nkwetamwaad niw emajidoo-
dwigaagewaad

AWE SHARON ASCHAIK



Niibwaa ekinoomaagzijig wdi kendaanaawaa iw sa emaa-
doodwigaagewaad pane jii doodwaawag Kinoomaagew-
gamgong. Giw gyak Canadian Health Survey kidwaag 71%
binoojii'ag 12-17 epiitziig gii maajiddowaawag 25% naanind aabji-
toowaad iw aabjichigan ge wiinwaa gii majidoodwaawag.

Giw yak artificial intelligence (AI) wdi wiidookwaawan kinomaag-
nag ji wiidookwaawaad niw binoojii'an ji kendmowaad ge chige-
waad. Mii iw Elaheh Sanoubari gaa dawendong, a post-doctoral
engineering researcher wdi gnwaabdaan nake ge zhi menendaag-
wak ge ji skwaataamgak iw emaa-
jidoodwigaagewaad aabjitoong iw
aabjichigan.

Odii University of Waterloo's Department of Systems Design
Engineering, Sanoubari wdi zhitoonnan niw Robots Empowering
Minds, naagegi RE-Mind, ge dazhiikmon binoojiinh ge aabjitood ji
gnowaabmaac now robots megwaa ow robot mjidoodwaad wiyan,
minwaa ge ji wiidookaazod ow e gnowaabjiged. Aabjitoowad niw
"social robots" wdi kendaanaawaa nake gezhi mno dajiikewaad ge
nake gezhi wiidookaazwad.

"Pii kendmaawaad niw robots wdi shkitoonaawaa nake ge zhi
aanjtoowaad waa zhiwebak minwaa ji dookbidoowaad ge ji mkwen-
domwaad gaa zhiwebak gii kidoo" kido Sanoubari, mii odii nokiid
Waterloo's Social and Intelligent Robotics Research Laboratory. "Mii
iw gezhi kenjigaaded gi shwenmad ow e mjidoodwind."

Niibwaa binoojii'an odii kinoomaagewgamgong odii Canada ge

United States wdi wiidookwaan ji wzhi'ing ow "student robot" ge
wiidookaazod kinoomaagewgamgong. Mii gezh wiidookwindwaa
ji waabwaawaad niw emjidoodaaged ge nake gezhi wiidookwaad
niiykiwenh. Wgii shkitoonaawaa giw binoojii'ag gi wzhitooowaad ge
nake gezhi wiidookaazwad.

Ni washme yaamgak iw RE-Mind, ow Sanoubari wgii gwejimon
naanind e nookijig ge giw ekinoomaagewad, ge child an youth
work. psychology, screenwriting, and game design. Giw ge naanin
odii University of Waterloo's Theatre and Performance Program gii
miigwewag ge wiin waa enendmowaad.

"Robots mendaagziwag aabijoong pii yaamon iw drama, ntow-
chigewag megwaa binoojii aabjiaad megwaa dazhiiked," kido Sanou-
bari.

Wgii wiidookwaan ge naanind 8-14 epiitzinid ko wzhitooowaad ge
wiinwaa. Aabjitoowaad iw LeBlanc's Taxonomy of Game Pleasures,
Nwaaswi mnik temgadoon ge aabjichgaadeg ji wjitoowaad iw dajiike
design ge ideas.

Ji nsitwadwaa giw kinoomaagnag pii wiindamaagewaad iw
anti-bullying pedagogy, midaaswi-shi- nswi wgii gnoonaanin niw
Ontario elementary kinoomaagnag ow Sanoubari mii giw gaa
dewendmowaad ji maaji wiidookwindwaa giw binoojii'ag. Aapchi
gonna gtaamgwendaaozi ow robot kiddo ow Sanoubari, binojii wdi
mendaan wiijiwaad ge gtaamozid ji kinoomawaad niw binoojii'an.

"Iw pii bgidnad ow robot binoojii ji dajiikwaad miigo aabgana ji



gwechitood ow binoojii ge zhichiged ow robot. Wdi zhi aawon niw robotun noojigegoon ji chiged mnowaazi ow binoojii. Miigo ji maaji kendaasod ow binojii,” kido Sanoubari.

Aabjichganing yaa ow robot e’aabji’aad ow Sanoubari dengue nooji e naagozid ge nooji animajood. Wdi yaa mzinaazigan ge zhi washme noondamon e kidoomgak ge washme ge nooding giidoyin, wdi shkitoon ji nomkwenood ge ji migbidood shtigwaan, nooji ge entaagid giidood.

Furhats robotics odii Colorado wdi zhitoo naawaa niw robots, USD15,000 (CAD20,000) nagzo. Sanoubari wdadwendaa kinoomaag-nag ji aabjitoowad niw off-the-shelf robots ji wiidookaazwaad ge ji wenpanak kendamon iw anti-bullying.

“Wenpanzi ji aabji’ad ow robot ji wiidookaag kinomaagyin” kido Sanoubari. “Giishpin wewenaa gidaamon ge wewenaa baamen-damon, kinoomaagnag wdaa aabjitoonaawaa niw robotun ji kinomaagewaad iw anti-bullying.” &

^ Giw Social robots Furhat Robotics gaa zhitoowaad gii miinaawag zhinikaazwinaan nake Echo (protagonist)- Baswewe (E niigaanzid), Circuit (victim)- Biimskwaating (Gaa mjidoodwind) minwaa Byte(antagonist -Etemgak zakaknigewin(Miigashki)

***“Iw pii bgidnad ow robot binoojii
ji dajiikwaad miigo aabgana
ji gwechitood ow binoojii ge
zhichiged ow robot. Wdi zhi aawon
niw robotun noojigegoon ji chiged
mnowaazi ow binoojii.”***



COMPUTING AND NETWORKS



GEGOON EZHKONMON



TECHNOLOGY AND SOCIETY



EZHITOOD



Gaazhi maajtaamgak iw Online Learning

Wegonen Gaa-noonde-Gikendaman zhi-Minochigeyan

AWE JULIA YOUNG

Julia Young ndizhinikaaz. Midaaswi shi-niizh nindako ayaa. Megwaa ngii-izhichige nind-co-op program imaa Pinnguaq, gii-ozhitooyaan miziwekamig waasamoo-asab ayaangwaamagad noondaagomichigan. *Harnessing the Benefits: The Digital World* izhinikaade owe. Ngiiamaamakaadendam zhi-gikendamaan Nibwaakaa'ikaan aapiji nitaa-anokiimaagad noomaye mii dash zhi-gikendamaan miziwekamig waasamoo-asab zhi-gwa digital safety daabidaa anjisewaad.

Apii gaa-ozhitooyaan owe noondaagomichigan, bangii eta Nibwaakaa'ikaan ngiigikendaan. Biigiskaadendaagwad owe inendamaan. Aapiji zanagan Nibwaakaa'ikaan gii-inendamaan zhi-gwa noonde-gikendanziwaan gagwe-gikendamaan coding zhi-gwa technical jargon. Mii dash gaa-noonde-gikendamaan aaniish iniwe inanokiimaagad. Niin dash wiin zhi-gwa niibowa gikinoo'amaaganag gii-aabajitoomin bebakaan Nibwaakaa'ikaan zhi-izhichigeyaang gikinoo'amaadiwin, dabishkoo Turnitin, My Bib, gemaa Grammarly. Niibowa Anishinaabeg ojiikendaanaawaa bebakaan Nibwaakaa'ikaan dabishkoo iniwe. Waa-wenipanad zhi-aabajitood Nibwaakaa'ikaan da'igwach zhi-doodang bezhigwan. Geyaabi niibowa ngii-noonde-gikendaan.

Ziigwang ngii-noondaan iwe ChatGPT, oshkay'i'ii Nibwaakaa'ikaan niibowa gikinoo'amaaganag ani-jiiikendamowaad. Ongowe gikinoo'amaaganag naagadawendamowag Nibwaakaa'ikaan

waa-ozhibii'igaadeg mazina'iganensan bezhigwan.

Ngii ni kendaan iw ChatGPT gaawiin eta ntaa zhibii gesii. Wahme gdi wiidookaagon pii zhitooyin gegoon aabjitoon iw gaa mkamon odii Internet.

Nake gonna pii maaji aabnitooyin iw ChatGPT ji wewiibtaamgak odi podcast. Ndi shkitoon ji wiidmowad ji mkan ni edowaabdamon minwaa ji gaazhiwtooyan minwaa ji wiindmaaged kina emkajigaa-deg, wdi shkitoon ge ji wiindmaaged bekaan eyaamon aaniw gii dowaabazwon.

Minwaa iw AI, *Harnessing the Benefits* gdaa aabjitoon omaa online learning, ngii gchi makwendaan go ge ngii gwechitoon ji kinoomaagziyaan. Pii iw pandemic gaa yaamgak ngii gwechitoon iw online schooling ngii menendaan. Aanwi go gii naasaab mnik gii nokii, gii shkitoon dash washme ji daazhiikaayin ji niigaanbizyin.

Naan godnong pii aabjitooyin iw online learning. Ngii daawendaan paamaapii ji chigeyan, ngii znagendaan. Pii odii kinoomaagwegamig yaayin pane wiyaa gdi kowaabmig, miidash esh kendmowaad giw ekinoomaagzjig pooch gi chigeng iw nookiiwin. Pii aabjitooyin iw online learning pooch gdi gtaamgoz ji nookiiyin giin eta. Enendamaan niin mnendaagwad iw online learning geyaaba go gdi shekaa. Iw yak *Harnessing the Benefits* gdi wiidookaagon ji yaamon iw online learning ge iw technology megwaa kendmon yaamgak enishisnok nake iw AP programs.

Gii yaa noon niibwaa niw scams ge giibaaziwemgak omaa AI-produced deepfakes ge egiwnimwaag omaa kinoomaagewgamig mii giw ezhkiniwjig ge binoojii'ag gaa myaa baamendmindwaa. Emsh-kowziigak iw password aabjitoong ge wewenaa aabjitooyin iw aabjichigan ge kenmadwaa niijikewenhwag mii iw ge wiidookaag-yin.

Zhibiimon iw podcast washme gaa kendaan iw online safety ge pii biidooyin omaa kinoomaagewgamong ji kenjigaadeg nake gezhi kowaabdizyin mega nookii ge ji aabjitooyin iw technology megwaa aabjitooswan niw ge zhewiibegan.

Mii azhi ji skwaa kinoomaagiyan gnaa aabjitoon pii nookiiyaan gaa kinomaagoyaan odi digital marketing ge pii wiidookaazyaan enjibaayaan. Gchi nendjigaade iw kinoomaagziwin. Gaawin gdaa miigaazsii yaaswon iw miidash ji zhaaswon odi online giishpin yaaswon iw kowaabjigan. &



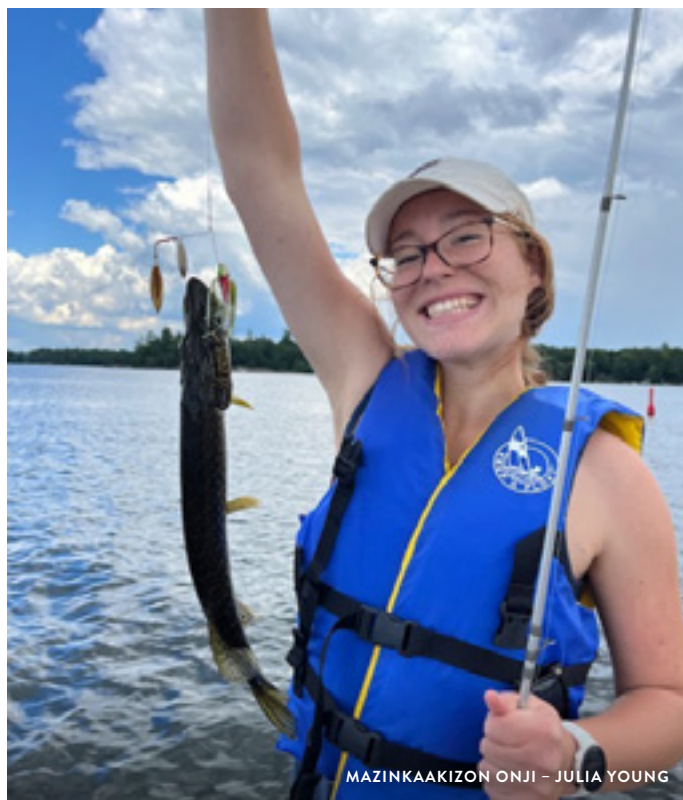
COMPUTING AND NETWORKS



GEGOON EZHKUNMON



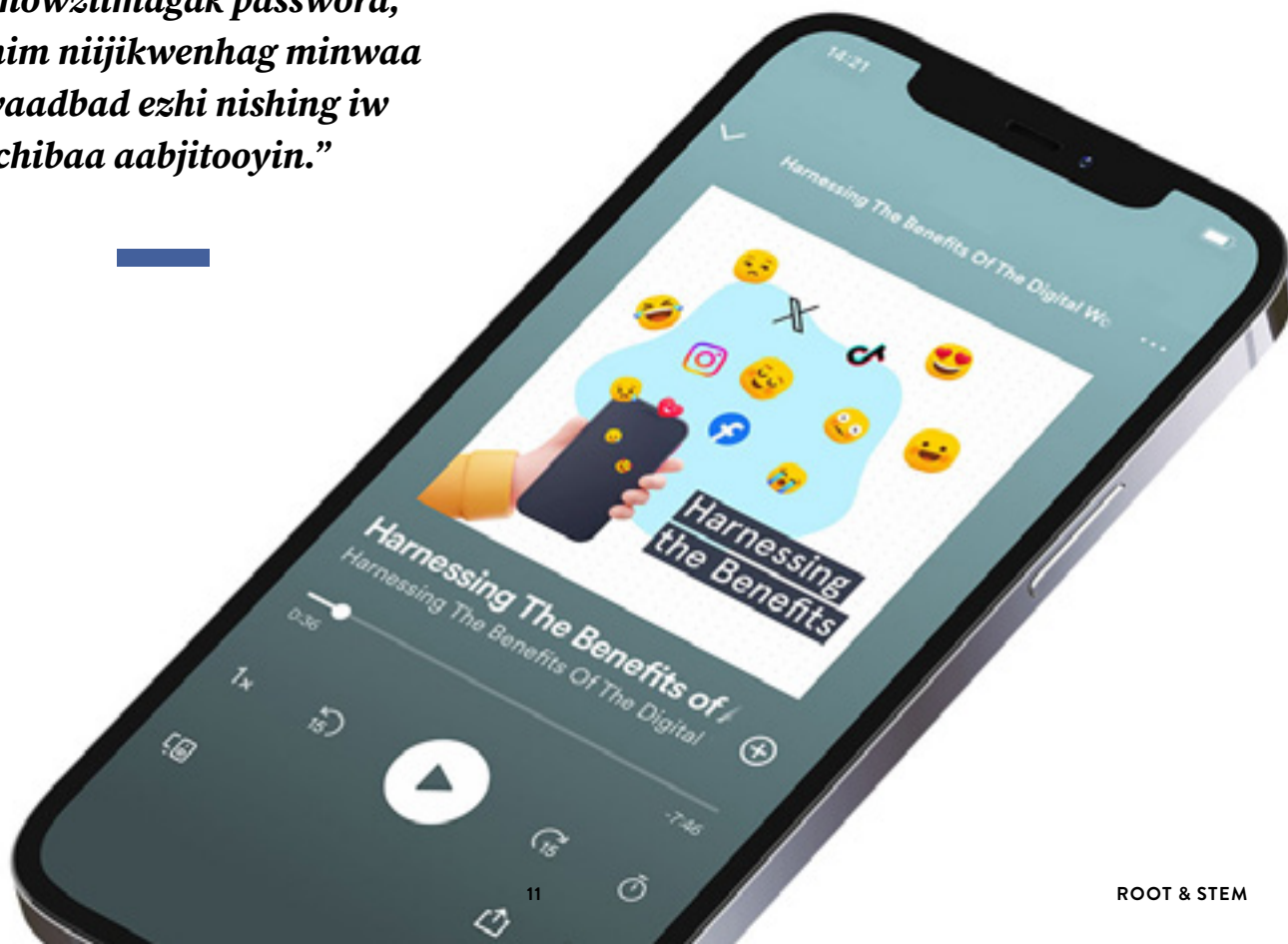
TECHNOLOGY AND SOCIETY



MAZINKAAKIZON ONJI - JULIA YOUNG

Julia Young ge giigonh

“Pooch gdi kendaan nake gezhi kowaabdizyin ge aabjitoon iw a mshowziimagak password, ge kenim niijikwenhag minwaa dowaadbad ezhi nishing iw chibaa aabjitooyin.”





The Web: Gegoo Wiin da Zaam Tokboziiwag giw Binoojii'ag

AWE CHLOE PHILLIPS

Mewzha 1991, iw World Wide Web gii shkini'iiwan ge gaawiin gii aabgchgaadesnoon nmik e aabjichgaadeg noogom. Washme nswidana mnik iw Web bmbiddegad, noojiwiya wdi aabjitoon eshkiniijig ge egtziwaad ndwaabjitoonaawaa iw Web. Noojigegoon gdaa chige aabjitoong iw wi-fi Connection minwaa gtaanendaagwad ge gtaamgwiindan ge ji wniseban jiishpin baamendmon. Naanind wenpandoon ge wiidookaagiyin giishpin wewena gnawaabdamon ge gnwaadamon pii aabjitoong.

Giishpin binoojii wesiiyan dowaabmaad. Aaniish nake ge zhichged? Miigoo iw Google ntam odii ji dowaabjikaadeg niw wessiiyan. Ngidaaswi Gamgong ge daa doowaabidan, washme dash djiikaamgad iw internet ji mkaajgaadeg edowaabdamong.

Znaagad ge pooch wewena gdi kinoomowaad ow binoojiinh pii aabjitoon iw internet, Gtaamgwiinwag omaa ge bokbi-doowaad gdaabjichgan ge gtaamwiino ge gwejitoowaad ji chegeyin edawendmowaad.

Giishpin wiya miinaaswad genoon ge ji wiidnamowaad ow binoojiinh AI eta ji aabjitoon.

Giw eshkiiniijig wdi mnendaanaawaa giidowaad ge gnoondiwaad omaa internet. Miigo gewiinaa ezh niizaanzid aabjitoowaad iw internet. Washme wiinwaa miinaawag ji aabjitoowad iw internet miinaawag ge iw washme emshkowziwang ge washme e dzhikaamgak ji aabjitoowad omaa AI. Washme ezinagak temgad omaa ge washme gnawenjigaade e'aabjitooyin washme ge kowaabjigaademgad. AI wdi shkitoon ji aabjitoon ndi zhnikaazwin ji yang noojige goon eyaamon. Wdi shkitoon ge ow AI ji kinwaadbid minwaa ji zhibii'ang edabendzik. Noogom dash social media aabjichgaade nake iw Snapchat ge Instagrammii i niw e'aabchigaadeg omaa AI giidowin e aabjichgaadeg omaa app. Mnenjigaadeg ge mnowaasiwemgad niw AI programs nangoodnong wiya gdi bi gnoonig mi inik iw ewinisemgak.

Washme egtizjig e ni shwaataawaad, da

gwejimaawag ji gnoondiwaad aabjitoong ChatGPT. Mi iw AI ge nkwetang ji kendmon ge ji debwe'endmon. Mii go ji gwedwed ow AI win ji chiged. Daa gwedwewak ji wiidokmindwaa miigo ow AI ji miinik edawendmon miidash ezhi wnitoon kenjigewin ow ekinoomaagzijig. Miidash pii niidywed ow ekinoomaagzid edabendzik mii iw gii gmoodyin ezhinkaadeg.

Gwejimaawag giw ekinoomaagzijig ji zibiimowaad gaa zhitoowad ge enendmowaad. Enedang ow ekinoomaagzijig chigewaad iw (gaawiin daa yaaziin ow AI) minwaa ji kendang ow ekinoomaagzid ji mkendang ge ji mkwenjiged ezhiwebak omaa digital world ezhinkaadeg. Kina mowndoshkaayang ge wiidookaazyang washme gda kendaamin ge chigengoban.

Niisho naabin chibaa aazhigeyin minwaa mkwendan nibwaa yaamgak ge zhegiwebnik ji maajiishkaaswon. Gda wiidookaagon iw AI ge kinoomaagewgamik minwaa ge iw internet ezhinkaadeg. &



Ge wiidookaagyin ji mno yaamon iw Safe Screen Time:

- Giin kinaa gnowaabdon chibaa nenmad binoojiinh aabjitoon
- Skaapga'on kinaa niw pop-ups ge advertisements omaa website
- Aabjitoon eta binoojiinh ge aajitoo'ban
- Gego aabjitookan gdi zhinaaawin ge enjibaayin pii wzhitooynin iw username ge passwords
- Wiindamow ow binoojiinh gego wiyaa wiindamawaaken gegoon
- Wiindamow ow binoojiinh ji aabjitoosik iw pooch wiyaa gnoonad
- Wiindamow ow binoojiinh gaawiin kinaa dewesnoon egidmon
- Maano da wiindamaage gaa waabdong ge gaa noondang omaa online
- Wiidabim magego besho yaan megwaa binoojiinh yaad omaa internet
- Miizh ginaa eta ji aabjitoon iw internet ow binoojiinh
- Bekaanak miizh gi chiged iw kinoomaagewgamgong nookiiwin

***“Giikendamin ezhi
mshkowziimgak iw internet
niibwaa ge gdaa kendaan
aabjitooyin.”***



COMPUTING AND NETWORKS



GEGOON EZHKONMON



TECHNOLOGY AND SOCIETY

Gdaa aazhigemin naa iw miikan?

Emnendaagwak Quiz

MAAJTAAN

Biinoojii'ag naa aabjitoonaawaa iw?

ENH

KAAWIIN

Nendaagwad naa ji yaamgak niw advertisements maagego aadekdaagemgad?

ENH

KAAWIIN

Gdi wiindaamaagegad na ji miigweyin kina eyaamon?

ENH

KAAWIIN

Nendagwad na wiyaa ji bi kidood gegoon eyaamon?

KAAWIIN

ENH

Gdi gwejimigoo naa gi miigweyin e owyin?

KAAWIIN

ENH

NI MAAJAAN,
MNENDAAGWAD
IW SITE

NAASAANAA
WEWENA,
GNAMAA
GEGOON TEMGAD
EMNOYAASNOK

GEGOO NI
MAAJAAKEN,
GAAWIIN
MNOYAASNOON
IW SITE

Aabjitoon iw Cybersecurity Omaa Kinoomagewgamik Aachkingan

AWE SHEENA BOLTON

Noomaye onzaamiiniwan gaa-miigaajigaadeg miziwekamig waasigani-asab gaa-izhiseg mii dash awashime naniizaanak imaa miziwekamig waasigani-asabing. Apii gikino'amawaaganag nasine aabajitoowaad miziwekamig waasigani-asab, gakina noonde-gikendamowaad zhi-ayaangwaamiziwaad imaa.

Zanagan zhi-gikinoo'amaaged gaa-ganawendaagwak miziwekamig waasigani-asab mii dash ongowee waa-nitaa-izhichiged wiindamoo'igaadewin noonde-gikendamowaad. Gaa-izhichiged "Information and Communications Technology Council" (ICTC), CyberTitan aapiji michaa aawang gaa-ganawendaagwak miziwekamig waasigani-asab bakinaagewinan. Gichi-inendaagwan iwe apii gagwe-gikendamowaad aaniin enakamagak imaa miziwekamig waasigani-asab. Through an exciting and fun competition, teams of students from across Canada reinforce their creative problem-solving, analytical thinking, communication, and collaborative skills. Ishkwaa ogiizhitoonaawaa, giishpin gikinoo'amaaganag wii-izhaawaad gichi-gikino'amaadiiwigamig zhi-gagwe-gikendamowaad nawaj STEM wii-minoseg. Maagizhaa omikaawaa' wijiwaaganag.

"Aapiji gii-minose owe doodamaang owe izhichigewin," gii-ikido Steven G., oodaanang gaa-daazhikang. "Niibowa ngiigikendaan ishkwa izhichigeyaan owe izhichigewin mii dash wenji wiindamawinagog zhi-doodaamowad gosha."

"CyberTitan ntam ge aabjichigaadeg ji

kenjigaadeg nake ezhi kowaabjigaadeg iw Canadian online data minwaa spaces against credible cybersecurity threats. Shkwaandeman nibwaa zheyaakmigaademon giw yak Anishnaabeg ge giw kwewag odii STEM. Naanan midaaswaak mnik ekinoomaagzijig wgii gjitonaawaa iw CyberTitan mminwaa nswaamidnaa-shi- naanan mnik kwewag gii mowdoyaawag.

Gdi kendaan nake ezhi gwexseg iw internet through its asynchronous Cybersecurity Fundamentals course. Mii iw ji nsitman iw digital identity and internet safety mii ge zhi kendmowaad iw cybersecurity skills development. Wdi kendaanaawaa eshwaataawaad nake ji kowaabdzang ji kenjigaadeg iw cyber security ge baabiiw gooyin.

"Mii odii high school ji maajtaamgak ji kendmowaad nake gezhi aabjichigaadeg minwaa gezh kowaabdiwaad," kido Devlin N.M. mewzha gaa chiged.

Minwaa gi ICTC miigwewag kinoomaagewnan minwaa asynchronous CyberDays miigwewag gechigeng washme ji kenman iw digital skills and a higher understanding of computer operating systems including defence and offence methodologies. &



NAKE EZHITCHGENG



EZHITOOD



COMPUTING AND NETWORKS



TECHNOLOGY AND SOCIETY



GEGOON EZHKONMON



CyberTitan VI 2020 eawechinaaged Louise bjimbaa odii kinaa kwewag FalconTech Terabytches 3.0 ezhnikaadeg



Iw pii 2020 giw Team Saints ezhnikaawaa da gwechkaagewag omaa kinoomaagewgamik aachkingan ji dbendmowaas iw Cyber Titan ezhnikaadeg

About ICTC

The Information and Communications Technology Council e'aawang iw (ICTC) Wiidookaazwag ge wiinwaa ji shkowziid Canada's digital advantage in the global economy. Dbei'ing Kina gii nokiiwag ji wiidookwaawad kina bmaadzijig ge niw businesses. Wdaa dawendaanaawaa ji aabajitoowaad kina go ekinoomaagoyin ge ji wiidookaaz-yin ge giin pii gwejkinaagiyin omaa global scale.

Ji kendmon maage wii waabdamon etalentcanada.ca/for-educators/programs/cybertitan, cybertitan.ca, or email cybertitan@ictc-ctic.ca.





MAZINKAAKIZON ONJI - PINNGUAQ

Wiindaamoo'ig-aadewin Giigidowin

dago Aiden Mackey, Callum Penney zhidgwa Tanner Big Canoe

AWE CHELSEA KOWALSKI

Pinnguaq wgii niigaanbidoonaawaa ntm Kwartha Lakes Hackathon Nmebine Giizis 2023: Code the Future of Voice Technology for eshkiinii-jig. Gii naaniizho saa wag giw eshkiniig-jig midaaswi-shi-niizh min gii chiwag gii giizhtooaad odii Lindsay Makerspace. Gii gchi nookiiwag niizh ge aapta bezhig giizis giidnakiimag megwaa kinoomaagzi-waad ge hacking ge gii wiidamaagewaad ga chigewaad. Iw hackathon ezhinkaadeg wgii zhitooanaawaa shki nendmowin for a shki Alexa ge aabjitoow wiya a ntm aabjitoow iw MIT App Inventor platform. Baanimaa gakina awiya ogii-miinigoowaan iwe Alexa geyaabi zhi-anokiiwaad. Callum Penney (11 gii-dasobiboone) zhidgwa Nibwaakaa'ikaanden Mackey (12 gii-dasobiboone) gii-baki-naagewag. Gii-inendaamoog zhi-izhitoowad Alexa powered digital andawejigen.

Callum zhidgwa Aiden ogii-wiindamowaan *Root & STEM* gaa-izhichigwewaad apii gaa-inendaamowaad ogitaatabiikaawan doodaamowaad zhidgwa aabjitowaad iwe wiindaamoo'gaadewin.

Wiindamaw'ishinaam wegonan iwe wiidamoo'igaadewin gaa-izhinaakaadeg?

Aiden: Gii-moojigitoowag gakina awiya gaa-anokiiwaad zhi-gikendamowaad awenen nitaa-izhichiged.

Wegonen gaa-gii-izhitooyag?

Callum: Zhi-gagwejimad Alexa zhi-odaminod, Odaminon "andawejigen" imaa nibwakaam'akak. Gii-wiindaamag Alexa zhii-izhaayan imaa Scratch, mii-ma'ateg iwe odaminayigan zhi-maajitoyin gagwe-jiminaanigan. Giishpiin gwayek doodaman, gii-miinigo giigidowinens zhi-wiindamoyin Alexa. Apii gaa-giizhitooyan, gaagwe-jim Alexa naagamon zhidgwa zhi-naagamod.

Aazha na gigiigikendan wegonan iwe wiindaamoo'igaadewin zhidgwa andi wenji gii-gikendaman?

Callum: Ngii-gikendaan iwe Scratch gaa-izhinikaadeg wenji imaa Pinnguaq.

Aiden: Ngii-maajitoon wiindamoo'igaadewin apii abinoojiyan. Apii gaa-aabajitooyaan Scratch nitam, ngodwaasi

^ Gaa dajiikewaad ge gaa niigaanbizwaad (Aiden Mackey, first from left in the front row, Callum Penney, third from left in front row, and Tanner Big Canoe, far right in back row)

gii-dasobiboone. Nisaye Austin ngii-gikinoow'amawig zhidgwa imaa Pinnguaq.

Wegonen dash gaa-gikinoow'amaagewaad zhi-gikendamowaad?

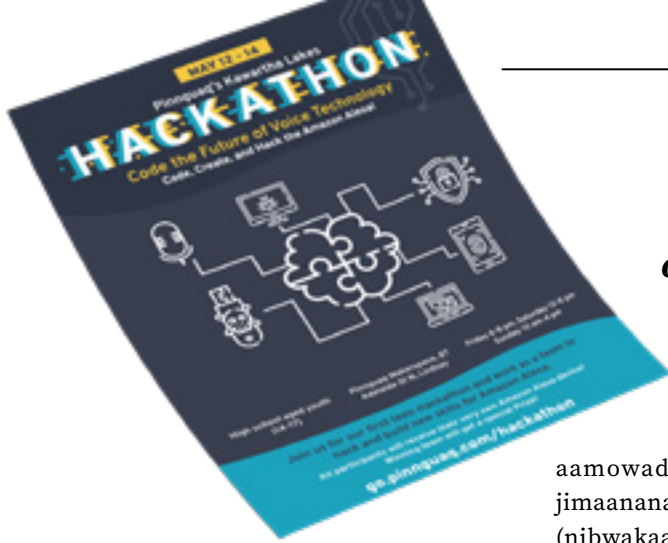
Callum: Wiindamoo'igaadewin niigaan wii-izhichigaade. Apii niigaan ni-wii-ayaamin biiwaabikowinan, biiwaabiko awiiyag zhidgwa odaabii'iwesii' odaabaanan. Wiindaamoo'igaadewin zhi-aabajitooyan iwe anokiiwin.

Aiden: Wiindamoo'igaadewin wii-wijii-wiigwan zhi-mazini'ozhiibii'gaywin zhidgwa zhi-ozhitooyan gakina gegoo. Owii-jiikendamooog gakina awiya. Aapiji-moojigitoose iwe. Aapiji gi-gichii'inendan iwe.

Wegonen zhi-wiindamaawad abinoojiyag giishpin noonde izhaawad imaa ogitaatabiikaawan wiindaamoo'igaadewin?

Callum: Apii gikendaaman zhi-abijitoowin, wendan iwe. Gakina gegoo gojitoon giishpin noonde-doodaman. Aabajitoon gi-wiinindib.

Aiden: Miinange. Apii gikendaaman zhi-abijitoowin, wendan iwe. Zhi-gikendaaman imaa giigido-biiwaabikoonsing.



“Imaa ogitaatabiikaawan wiindaamoo’gaadewin ngii-waabamaag oshkaadiziig gaa-mikawaad wijiwaaganag.”

Gi-gii-aabajitoon na iwe wiindaa-moo’gaadewin baanimaa ogitaatabiikaawan wiindaamoo’gaadewin?

Aiden: Ngii-aabajitoon iwe wiindaa-moo’gaadewin zhi-ozhitood Alexa iwe nibaa-dibaajimowin. Ngii-mikaanan dibaajimowinan zhi-bizindaawaad nishiimensag apii wii-nibaawaad. Daabidaa wiinawaa noonde-bizindawaa Alexa; gaawiin niin.

Ni-wii-nagishgawaanan Tanner Big Canoe. Wiin gii-wijjiyay zhi-maajitoon iwe ogitaatabiikaawan wiindaamoo’gaadewin zhi-wijiwaad abinoojiyag zhidgwa ozhkinniwag zhi-wiindaamoo’gaadewin.

Wiindamoo’ishinam iwe ogitaatabiikaawan wiindaamoo’gaadewin aaniin izhichigaa-deg imaa.

Dabishkoo awiyiyag zhi-okobiwad zhi-dazhiikaamad iwe anokiiwin. Ngii-minigomin bakaan gaawiin gaa-minosewin zhi-dazhiikaamaang. Bebakaan zhi-maadanokaadanang. Bangii eta zhi-akobiwad zhi-gojitoowad iwe anokiiwin. Mii’iwe zhi-gitaatabiian magizhaa niinz gemaa niswi giizhigoonan. Gegoo gi-wiindaamoo’gaadewin apii zhidgwa gegoo gii-ozhitoon zhi-minosed iwe izhichigewin. Apii-giizhitoowad gakina awiya gaa-dazhiikamowad, mii apii gaa-dibaakonigaazowag. Gi-bakinaage giishpin gwayak doodaman iwe izhigewin.

Wegonen onji aabaajitowan iwe giigido’ikaan Alexa zhi-maajitowan?

Gakina awiya ozhitoowag anokiiwinan zhidgwa waasamoo-asibi-mazina’iganan mii dash geaabi niibowa oshkay’ii gaawiin mashi awiya aabajitoosig nasine. Ngii-gojitoomin bakaan zhi-doodamowad iwe abinoojiyag. Ngii-inendamin zhi-gikend-

aamowad oshkay’ii iwe. Gii-gagwe-jimaanag zhi-aabajitoowad iwe Alexa (nibwakaa-giigidowin) zhi-ozhitoowad gegoo gaa-minoseg gemaa odamino’igan.

Awegwen bakaan gaa-izhichigewaad gaawiin dash gii-bakinaagesiiwag?

Minange. Bezhidgwan awiyyaag aapiji ogii-jikendaamowag obiizikiiganan. Gii-noonde-izhitoowad bakaan zhi-gigishkigewaad endaso-giizhidg. Ogii-wiindaamoo’gaadewin Alexa zhi-wiindaamaagod wegonen zhi-biisikang. Zhi-gagwejmawaad Alexa, “Wegonen zhi-biisikaaman noon-gom?” Alexa gii-naanaagadawendaan ezhiwebak zhidgwa bebakaan gegoo mii dash gaa-wiindamawaad gegoo minose zhi-doodamowad. Gii-minose wegonen zhi-biijikonayan gigizheb.

Wegonen gaa-dibaakonigewaad nandawaabandameg gaa-izhichigewaad zhi-bakinaagwad?

Gaa-dibaakonigewaad onandawaabandanaawaa awiyag gaa-wiidanokiimidizowaad, gegoo minonaagwad zhidgwa minwendaagwad, dago gaa-jikendaagwad. Gakina awiya ogii-gikendaan daa-aabajitoowad MIT App Inventor zhidgwa Alexa zhidgwa bizaanigo bebakaan technologies daa-aabajitoowad gaye. Aiden zhidgwa Callum ozaam ogii-gikendawaa Scratch mii dash wenji gaa-aabajitoowad zhi-minonaagwak.

Aanish nake gezhi aabjitoongban iw hackathon ji wijiinookitaagziyin minwaa gi mkawad ow shki niijkiwenh?

Gii-wiindamoo’gaazowag 14 daso-diba’iganan eta-gakina zhi-doodamowad zhidgwa wiinawaa inendaamoo’gaadewin gii-izhichigewag dago maamawi anokiiwad. Zhi-izhichiged ogitaatabiikaawan wiindamoo’gaadewin wii-minose zhidgwa gakina awiya wii-gikendamowad maamawi anokii-

wad. Ngii-moojigitoomin. Ngii-inendamin gakina gaa-odaminod zhi-ojiikendamaad zhidgwa minosewaad apii odaminowaad. Niibowa oniigii’igoog ogii-wijji’iwaa onii-jaanisag zhi-odaminowaad nasine. Iwe gaa-odaminowaad ogii-mikawa bakaan wijiwaaganag apii odaminowaad zhidgwa ishkwaa.

Gegoo na gidayaan ji-wiindamawad awiya gaa-noonde-doodang nitam iwe ogitaatabiikaawan wiindaamoo’gaadewin?

Gojitoon! Maagizhaa gi-gii-inendam gaawiin nitaa anokiiwin gemaa gaawiin awiya nitaa gi-wiidanookiimaasii. Mii ishkwaa izhichigeyan iwe ogitaatabiikaawan wiindamoo’gaadewin, azhaa bakaan ngikendaan zhi-doodamaan wiindamaw’gaadewin. Maagizhaa gigikendaan aaniish zhi-nitaa-adaawaageyan zhidgwa zhi-nitaa-zagakingeyan. Maagizhaa giin dash wiin gaa-nitaa-niigaaniyan. Giishpin noonde-odaminoyan awiya gaa-wijji’ig zhi-minoseyan imaa ogitaatabiikaawan wiindamoo’gaadewin. Mii’iwe gaa-gagwe-gojitoowag. &

 **NAKE EZHITCHENG**

 **EZHITOOD**

 **COMPUTING AND NETWORKS**

 **TECHNOLOGY AND SOCIETY**

 **GEGOON EZHKONMON**

Root & STEM mii dash MAKE waabanda’awaad gaa-gikino’amaagewaad bakaan izhichigewinan aabjitoowad STEAM imaa gikino’amaadiwigamigong. Giishpin gikenimad awiya gaa-nitaa-gikino’amaaged, windamawishinaam omaa STEAM@pinnguaq.com.

Gnebgoog ge Kwaandwaaganan: Online Safety Edition!

Naanaan goding aabjitooyin iw internet gdi chi maamkaadendam, nake pii dajikeyin iw Gnebbgoog ge Kwaandwaaganan. Gaawin naasab nake iw mewja gii dzhiikmon, bekaanak gdi jichige. Giintam pooch gdi dagoshin omaa dgodwaak, naanind gnebgoog yaawag maago kwaanwaaganan tenon. Giishpin shtigwaaning gnebig dagoshnin, pooch gdi gidaaniw online safety statement niisi'ing etemgak daabshkoo gidaaswi yaamon. Gaawin gii gake chigesii daa niisbiz goopii zowaang genebig yaa yin. Giispin niisiing kwaandwaagan dgoshnin pooch gdi gidaan iw online safety guidelines gyak minwaa pooch niisi'ing etemgak minwaa mkaan daabshkoo gidaaswi miidash ji shkaandweyin iw kwaandwaagan.

Gwechginaadwin: Iw yak giispin dagoshnan omaa gbebig yaad gdimnoyaa. Chibaa maajtang noji wiya wdi yaan gidaaswi bezhig gopii nigodwaaswi. Giispin gnebig dagoshinana pooch gdi gidaan getin iw online safety statement miidash ji giitooyin ji pagnad ow dice giishpin doshinan iw gdi gidaaswin gdaa anjitoon ge chigeng omaa e kidoomgak omaa online statement. Niising etemga-doon niw kidwinan niisiing iw msinigann. Giishpin debwesnok pooch g'ga niisbiz ow gnebig.

Kwaandwaagan - Gchi Nishin!! G'gii maadadoon iw online safety guidelines gyak!

#4: Gchi nishin kowaabyin! Chibaa giishpnadooyin gegoon, gnwaabdan ezhi nishing website, minwaa gnowaabdan iw "https" odii ntaam etemgak URL. Iw "s" etemgak onma skwaaj iw "https" mi ji kendmon mnoyaamgak!

#12: Gdi Gnoondbe! Gaawin g'gii aabjitoosiin iw gdi zhinaakwin pii zhaayin iw social media account. Znagad ji mkowgoyin wiya wii mjidoodag.

#40: Gchi nishin gnowaabyin! Kina giw ekenmadwaa ge gnijikiwenhag etaa gdi yaawag.

#57: Gtaamgoz! Gaawin g'gii gnoonaasii ow gaa mjidoodaag. Gii wiindmawaa egtizid minwaa gaawin g'ii nwtetzii.

#72 Gdi gyak chige! Wiya g'gii bi niidaayik mzinaazwin emendandaagwak ekendmad gii wiindmaago gi maaji niidyewyin kinaa ekendmadwaa. Gawiin g'giikid, gii baataamgeyin, ge gii wiindmawad egtizid.

Gnebgoog—Gaawin gii maadadoosiin iw online safety guidelines gyak!

#23: Eyoo Gaawin! Gii niindaa'aa wiya gdi minaazwin gaa nendmaon kendmad. Wiya gii bi gnoonig ge wiin gii waabdong, gego wnedgen manjo etooyin omaa internet mii maa pane temgak.

#96: Gaawin kina dewesnoon omaa social media accounts Gii yaan iw DM gii pinaageyin ge ji niidyweyin biidwdaabik giidowin miidash ji yaaman niibwa spam pane.

#47: Zaam e wenpanak password gii zhitoon noji wya wdi kendaan. Miigo ji aadaapkgad ow hacker gaawin g'gaa shkitoosiin gi zheyaaknamon.

#73: Gaawin wiya owsii ekidod aawid! Pii gii shkwaataayin wiya gnoonad, gii kidom ji nkwehdaading giwaa eta. Mii iw ji kendmon gii giwnimod ge gaawin aawsii ekidod aawid.

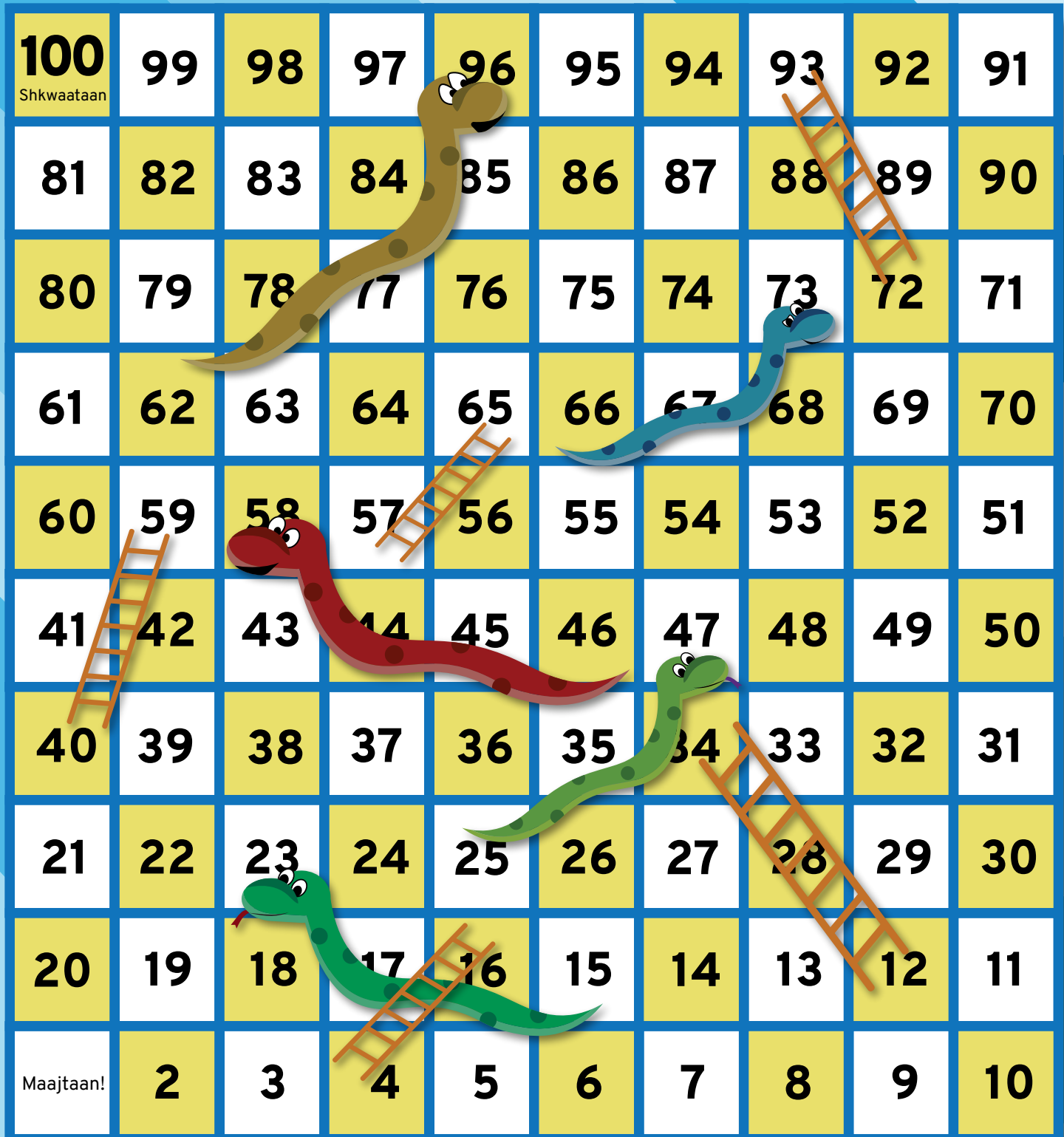
#58: Gego wnenngen gi tooyin iw antivirus program. Miidash spyware yaamon aabjichiganing ge wiya wdi yaan iw personal data!

Nkwetaagnan

#23 Gego niindyweken gegoon noji wiya ge waabdong giishpin dewendzilwan! #47 Maano gchi ge egaazhiwang zhiibgaaswinan minwaa gidaaswinan da tenoon iw password! #58 Pane aabjitoon iw antivirus software omaa aabjichiganing! #73 Ntaam wiidmow wiya giishpin wiya wii nkwehwad! #96 Gego baamendngen pop up adds ge gego miigwejken personal information!

Gnebgoog ge Kwaandwaaganan:

Online Safety Edition



Gwechinaading?: [Gego wnendgen ji yaamon iw gidaaswi](#)

GIDAA-IZHITOOD NA GEGOO AAPJI ZANAGANG ZHI-GIKENDANG?

Gimoojibii'igan inaabajitoon dabishkoo online gashkaabika'igan. Aapiji zanagan awiya bakaan zhi-mikang giishpin gaa-ozhitooyan owe nitaa-gimoojibii'igan. Nasine aabajitoon bebakaan ikidowinan, mazinibii'igewinan, zhigwa agindaasowinan. Gegoo daa-izhichigaade debinaak mii dash zanagang zhi-minjimendaman. Giishpin aabajitooyan dakwaa ikidowinan zhigwa agindaasowinan wii-wendan zhi-minjimendaman. Maagizhaa mazinaatesewinan zhi-aabajitooyan gemaa bakaan gegoo imaa gikinoo'amaagewigamigong gimoojibii'igan. Izhitooon gimoojibii'iganaapiji zhi-zanagan bakaan awiyaa zhi-baakiniged.

Anaaming na gidaa-onendam iniwe giimoojibii'iganan? Aazha nitam ogizhitooon zhi-waadaman aaniin zhi-izhichigeyan. Anaaming mazina'iganens owe nakwetamowinan.

Owe izhichigewin aabajichigaade Zhaaganaashiimowin

Un42n8ly4U,I'm#1

Unfortunately for you, I'm number one!

(niin bezhigwan... gaawiin giin)



2Much2Watch4Us!



U8Tom8os4Lunch?



M&@oryPassw0rd!



:) Birthday2U!



1. Too much to watch for us! (aapiji ozaam zhi-waadamanang?)
 2. You ate tomatoes for lunch? (gi-gi-ammwaag na oginiig aapi naawakweg?)
 3. Mandatory password! (gimoojibii'igan gosha) 4. Happy birthday to you! (mino-dibishkaman giin!)

I1The10isM@ch



C@chUL8r!



Ma+h=:)Me



5S&eIsl&s



,&erOfThe7Cs



A#OfPeople<3C@s



-2TheFinish_



*Wars4>*Wars1



5. I won the tennis match. (aa'azhaw-i-bakiteyigeng bikwaakwad ngli-bakinaage) 6. Catch you later! (giga-waabamin minawaa) 7. Math equals happy me (aapji njikendaan agindaasowin) 8. Five sandy islands (naano zhiingobigong miniswi) 9. Commander of the seven seas. (gaa-niigaanid imaa Nii'zhaaso Gichi-zaaga'iganan) 10. A number of people love cats (aanlin amik jikeniimaawaad boozhensag) 11. Dash to the finish line ((gi-daaablin zhi-gizhitooyan) 12. Star Wars 4 is greater than Star Wars 1 (mili owe Anangong Mii'gaading 4 gaa-michaag apich Anangong Mii'gaading 1)

DIBAAJIMOWIN GAA-OZHIBII'IGED RICHARD VAN CAMP
OMAZINIBII'IGANAN MICAELA DAWN

IKWEWIMANILOOSH









AWENEN
GAA-IZHINIZHAAMOWID IWE
IKWEWIMANIJOOSH?

OOOOO NBAABAA.
AZHAA MIINAWAA
IKIDON.



NDIKWEZENSIM,
AZHAA ZHAANGASWI
AKIING APII
GAA-NIBOYAN.

GAAWIIN NBAABAA,
GEGO. GIZHAAWENIM---

OWE ABIJICHIGAN, GAAWIIN
GIIN AWE, ABIJICHIGANIKAAN IWE.
GIMINOWEWIN APII GAA-NOONDAWANAAN
GII-GIDOWIN. GAAWIIN
DASH GIIN..



SUZANNE
'BABY GIRL'
RIVER

GONE TOO SOON
AND LOVED FOREVER



AHAAMSA,
NDIKWEZENSIM. AAZHA
ZHI-OMAWIMAANAN.

AAPIJI
GIZHAAWENIMIN
NDIKWEZENSIM.
GIGAWAABAMIN APII
NDAANISENS.

A young child with dark hair, wearing a blue jacket over a red Spider-Man long-sleeved shirt, is reaching out with their right hand towards the back of a black computer monitor. The monitor is on a desk, and its back panel with various cables is visible. The background is a blurred library with bookshelves filled with books. The overall lighting is warm and indoor.

Aanjtoongak iw Technology

Aanish Nake Ezhi Aansemgak iw Language Revitalization

AWE SOFIA OSBORNE



Apii Aidan Pine gaa-izhaad nitam imaa University of British Columbia zhi-gagwe-gikendang gaa-aabajitoon-inwewin, gii-noonde-anokii mamawi dazhiikang inwewin ningoji bakaan. Ogii-madenookiiman awiyaag gaa-nitaa giigidowaad iwe Gitksan inwewin gaa-izhinikaadeg. Imaa BC wenjiyag iwe Gitksan Nation. Apii gaa-gii-zhitoowad wii noonde izhitoonawaa (app). Pine gii-ikido, aapiji gii-zanagan moonyaashag zhi-izhitoowad dinookaan iwe (technology).

“Gii-ozaamiinowag ingiiweg gaa-gii-noonde anokiiwad, gaawiin dash gii-nisi-dotani’ziiwag gaa-izhiseg izhitoowaan gikendaasoo-mazina’iganan,” gii-ikido. “Ogii-gikendaawaa aaniin zhi-izhitoowaad (websites), gaawiin dash odanokiisiitan’iwag iAnishinaabemowinan.”

Aapiji akoginde, gegaa \$100,000 zhi-giizhitood iwe app.

“Ginwenzh ngii-anokiimin... aaniin dash gegoo wendang zhi-giizhitood?” Pine omikwendaan naanaagadawendang.

Apii aabajitoyan technology onji gikino’amaageyan inwewin, noonde-naanaagadawendaman gegoo dabishkoo gaazowinan zhi-gwa gaa-dibendamowaad. Pine wiin ogii-ozhitoon iwe Gitksan anokiwin imaa gichi-gikino’amaadiwigamig.

Ogiiwaabandaan owe software bakaan inwewinan maagizhaa wii-aabajitoowaad wiinawaa zhi-dazhikamad inwewinan. Mii wenji gaa-maajitood Mother Tongues izhinikaade.

Gakina ishkongiganaaning giishpin noonde-aabajitoowaad Mother Tongues



➤ Mother Tongues wííj'ígon awiyag zhi-ozhitoowaad odinwewinan gikendaasoo-mazina'iganan. Onji-Mother Tongues zhi-gwa iwe Gitksan Research Lab

➤ Giigidowin Ozhichigewin iniwe Inwewinan Gikino'amaagoziwin gaa-izhichigewaad, mii imaa namanjinikaang zhi-gwa gichinikaang. Ross Krekoski (University nuhelot'ine thaiyots'i nistameyimákanak Blue Quills), PENÁĆ (W SÁNEĆ School Board), Roland Kuhn (NRC), Erica Cooper (National Institute of Informatics), Delaney Lothian (NRC), Owennatékha (Onkwawenna Kentyohkwa), Tina Wellman (University nuhelot'ine thaiyots'i nistameyimákanak Blue Quills), Aidan Pine (NRC), Akwiratékha' Martin (NRC), Rohahiyo (Onkwawenna Kentyohkwa), Tye Swallow (WSÁNEĆ School Board), Anna Kazantseva (NRC), zhi-gwa Dan Wells (University of Edinburgh)

Dictionaries, wiinawaa zhi-ozhitoowaad gikendaasoo-mazina'iganan anokiwinan. Gakina awiya gaa-noonde-aabajitoowaad, gaawiin gegoo zhi-diba'igesigwaa. Apii agwaanaasod, daa-aabajitooyan anokiwinan aaniindigo.

Giishpin noonde-mikaman bebakaan ikidowinan, gaawiin gaa-gwayakobii'igesiiwan, geyaabi zhi-aabajitoyan Mother Tongues. Pine gii-ikido gichi-inendaagwan Mother Tongues zhi-nanaandone'ang gakina gegoo dabishkoo gaa-gii-ozhibii'igeyan.

“Gikino'amawaaganag mamiidaawenda-moog apii gaa-nanaandone'waad ikidowinan zanagang zhi-gwayak-aabajitoowaad gikendaasoo-mazina'igan,” Pine gii-ikido. “Apii aabajitooyan gikendaasoo-mazina'igan zhi-nanaandone'waan ikidowinan aazha zhi-gikendamaan aaniish zhi-nitaaw-ibii'igeyan. Gaawiin minosesinoon, mii na gwayak?”

Noongom dash, awashime 20 bebakaan inwewinan dazhikewinan aabajitoowag Mother Tongues zhi-izhichigewaad gikendaasoo-mazina'iganan. Pine gii-ikido gaa-gikino'amaagewaad zhi-ganawaabandamowaad iwe Anokiwinan Adaawewigamig gemaa mothertongues.org zhi-mikamowaad giishpin gikendaasoo-mazina'iganan aazha atemagad wiinawaa inwewin zhi-agwaanaasowaad.

Pine anokii iwedi National Research Council of Canada odazhiikaan technology zhi-wííj'iwaad Anishinaabeg zhi-ozhitoowaad inwewinan izhichigewinan.

“Niwii-noonde-gagwejimaag Anishinaabeg wegonen noonde-aabajitoowaad

onowe technologies, gaawiin eta zhi-wiindamawaasiwangid,” Roland Kuhn (Niigaana-bid) gii-ikido.

Aapiji ojiikendamowaa owe ReadAlong Studio, mii owe aabajichigan gaa-gikino'amaagewaad zhi-ozhitoowaad dibaajimowinan zhi-bizidamowaad zhi-gwa zhi-giigidowaad apii gaa-anamichigewaad.

“Apii gaa-akobiiwaad gikino'amaagewaad, curriculum developers, zhi-gwa gikino'amawaaganag aapiji gii-zanagang zhi-ozhitoowaad educational content Anishinaabemong,” Pine gii-ikido. “Niibowa gaa-gikino'amaagewaad gaawiin gii-gikendamosiwwag aaniin zhi-ozhitoowaad onowe giigidowin zhi-gwa bizindamowin.”

Owe ReadAlong Studio bezhigwan aabajitood speech recognition zhi-gwa text audio alignment dibaajimowining. Dago-odanamitoowad odayaan iwe dibaajimowinan ikidowinan zhi-gwa gaa-giigidod gichi-Anishinaabe Anishinaabemong eta. Gikino'amawaaganag daa-aabajitoowag dago-odanamitoowad weweni zhi-bizinda-moog zhi-gwa weweni zhi-anamichigewaad. Mii dash gikino'amawaaganag daa-bizinda-moog miinawaa zhi-nisidotamoog ikidowinan gaa-nitaa-gaagiigidoowad.

Gakina awiya daa-aabajitoowaad iwe dago-odanamitoowad, gaawiin eta Anishinaabeg. Gaa-gikino'amaagewaad miziwekamig gii-ozhitoowaad read-alongs, mii imaa Columbia, Nepal, the Netherlands, Nigeria, zhi-gwa Taiwan.

Bakaan aabajichigan Indigenous Languages Technology Project gii-ozhitoowad mii owe Kanyen'kéha gemaa Mohawk



MAZINKAAKIZON ONJI - NATIONAL RESEARCH COUNCIL CANADA / CONSEIL NATIONAL DE RECHERCHES CANADA

ikidowin gaa-wiidamaagemagak mamaajisewin gaa-aanjitoowaad. Owe aabajichigan Kanyen'kéha gaa-gikino'amaaged Owen-natekha gii-inendam.

Apii ogiigagwejimaan Owennatekha wegonen gikino'amaawaaganag noonde-ayaamowaad imaa Onkwawenna Kentyohkwa Gikino'amaadiiwigamig (Our Language Society) Six Nations of the Grand River, gii-ikidod gikino'-amawaaganag. Ozanagendaanaawaa iniwe ikidowinan gaa-wiidamaagemagak mamaajisewin. Owe polysynthetic inwewin iwe Kanyen'kéha, mii dash bezhigo-ikidowin aabajichigaadeg ikidowinensan (morphemes). Apii giigidod Kanyen'kéha ikidowinensan waa-aabajitood, mii dash giishpin zhaaganaashiimod waa-noonde-aabajitood niibowa ikidowinan zhi-giigidod naasaab gegoo. Kanyen'kéha aabajichigaade niibowa ikidowinan gaa-wiidamaagemagak mamaajisewin gaawiin dash Zhaaganaashiimowin. Inwewinan dabishkoo Zhaaganaashiimowin aabajichigaade niibowa nouns.

I m a a o w e O n k w a w e n n a Kentyohkwa Gikino'amaadiiwigamig, gaa-gikino'amaagewaad aabajitoowaad root-word inakamigad zhi-wiji'igonid gikino'amaawaaganag zhi-gikendamowaad Kanyen'kéha.

Kuhn, Owennatekha, Gaa-gike-noo'amaagewaad zhi-gwa wiinawaa ogiwi-idanokiiwaan zhi-ozhitoowaad ikidowin gaa-wiidamaagemagak mamaajisewin gaa-aanjitoowaad (aabajichigan awiyag wii-aabajitoowag zhi-gagiiginamowaad awenen, aaniin apii, zhi-gwa ikidowin gaa-wiidamaagemagak mamaajisewin), mii dash maagonamowaad gegoo zhi-waabandamowaad gwayakobii'magak ikidowin gaa-wiidamaagemagak mamaajisewin. Gikino'amaadiiwigamigong gaa-gikino'amaagewaad zhi-gwa gikino'amaawaaganag daabidaa owiidanokiimaawaan. Mii dash Owennatekha gaa-ikidod geyaabi iwe ikidowin gaa-wiidamaagemagak mamaajisewin gaa-aanjitoowaad minoseg.

“Zanagan giishpin gagwe-gikinawaa-dendang inwewin dabishkoo Kanyen'kéha, naasaab Zhaaganaashiimowin zhi-gagwe-gikinawaadendang gakina ikidowinan,” Owennatekha gii-ikido. “Onizhishin iwe [verb conjugator].”

Bakaanad Anishinaabeg inwewinan omaa Canada mii dash gegaa gakina aawang polysynthetic. When other Indigenous language educators in Canada saw the verb conjugator prototype, they started requesting it for their own languages. Since then, members of the team have created conjugators for Michif, Mi'kmaq, and Anishinaabemowin, and are working on interactive apps for Nêhiyawêwin and SENĆOŦEN.

“Ekinoomaagan gaa kinoomaaged iw Kanyen'kéha, gaa miigwed gi aabjitooyin, apache dash gii menaajigaade aabjitooniw anishinaabewin,” Kunh kido. “Mii iw pane edowaabjigaadeg.”

Pine, Kuhn ge naanind odii Indigenous Languages Technology Project wdi wiji nookiid waawaan Onkwawenna Kentyohkwa ji biidmowaad niw kidwinan iw verb conjugator to life.

Owennatekha kido, “Ngoding gii zhitoo-yin iw verb, gishpin bekaanzid gnowaab-dong maamkaaji zhinaagwad giishpin kendziwan iw nake entaagzid gaa zhitood.”

Kina giw nookiitaagnag wdi gweji zhitoon naawaa iw text-speech ji wiidook waawaad niw ekinoomaagzijig ji bzindmowaad niw kidwinan gaa zhitooowaad. Niibwaa niw conjugations, dbe'ing daadnikaa-zong ji kidwaad be'bezhig niw kidwinan. Memkaaj neural network wgii zhitoonaa waa iw interconnected artificial nodes ji kinwaabjigaadeg iw wiinendip ji chiged iw text-to-speech aabjitood iw data etemgak niw dbaajmownan, wiidnamaagewnon. Gaawiin dbe'ing uw data omaa algorithm ji miigwed niw kidwinan ge aabjichigaaged be kinomaageng.

Wgii dawendaan ge ow Owennatekha ji aabjichigaadeg iw text-to-speech odii kinoomaagewgamong.

“Daa gataamgwendaagwad nondmon pii debnamon iw kidwin. Daa gchi wiidookaagemgad”

Bangji eta yaawag giw anishinabe giig-dodwaad omaa Canada giw gonna e aabjitoowaad iw artificial intelligence, Kuhn nendam iw gaawiin denomnick yaason iw data miidash ezhi kidwaad giw linguists bgiishen eta yaamad kendaaswinan.

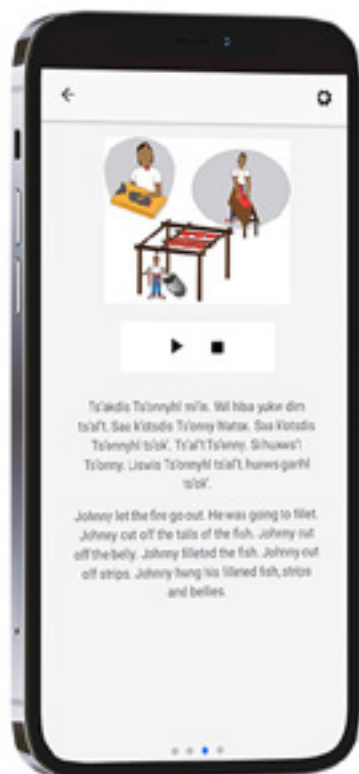
“Giw eta e zhaagnoshiimwad ge e wemtagoozhiiwaad wdi kendiziinaawaa niibwa temgak iw free data omaa web site,” kido Kuhn. “Gaawiin anishinaabemwin wdi yaaziinaawaa.”

**“Gaawiin
piitendaagwaasnoon
enweyaan naanind
kidwa, washme naanin
gchi piitendaagwanon
Mii iw psychological
effect.”**

✓ Gikino'amaawaaganag gii-giizhiitaawag 2013-2014 inwewin gikino'amaagewin imaa Onkwawenna Kentyohkwa.



MAZINKAAKIZON ONJI - ONKWAWENNA KENTYOHKWA



◀ Iwe dibaajimowin Ts'onny Go'ohl Wilp Sihon gidaa-mikan Gitksan anokiwin. Mother Tongues gii-ozhitood iwe Gitksan anokiwin mii dash Gitksan anokiwan gaa-aabajichigaadeg gaa-anamichige-aabajitooon gaa-anamichige-anokiid. Onji-Dr. M. Jane Smith (Xsiwis) zhigwa Michelle Stoney, Mother Tongues, zhigwa iwe Gitksan Research Lab.

✓ Giishpin aabajitood Nandawaabanjigewin imaa Gitksan miziwekamig waasigani-asab gikendaasoo-mazina'igan, daa-waabandamad gakina dinowa ikidowinan. Onjiwaad Mother Tongues, iwe Gitksan Research Lab, zhigwa Ken Mowatt (Maaslik'i'nsxw)



Noogom, Inuktitut eta e zhibiigasadeg ge eta e aabjichigaadeg omaa Canada washme niibwa data temgad ge aabjitoowaad giw Inuktitut-Zhognoshiimwin eyaajig omaa Nunavut Legislative Assembly.

Kuhn minwaa naanind wgii wii nookit-waawaan niw Nunavut Legislative Assembly ji zhibiimowaad iw Inuktitut shewey'ing zhognoshiimwin. Iw pii 2020 wgii aabjitoonaawaa ji kendang ow aabjichigan niw kidwinan gaa zhitoowad.

Geyaaba Kuhn kido gaawiin mshi gchi nishisnoon.

"Gaawiin tenamnik yaasnoowan ji omaa aabjichiganing niizho temgak iw entaagzing Zhaagnoshiimwin ge Inuktitut, zaam niibwa niw grammatical stuctures yaanon." Kuhn kido, "Washme niibwaa dawaenjaadenon."

Washme niibwaa dowaabjigaadeg kidwinan nake Kanyen'keha ge zhaagnoshiimwin.

"Bangii eta kinoomaagewin data, gaawiin gidaa shkitoosiinmin ji zhitooyang niw niizh entaagziwad," Kuhn kido. "Mnogyak giw

Mohawks gii dawendaasiinaawaa iw aabjichigan ji zhaagnoshsiimawad, aazhi wiinwaa wdi shkitoonaawaa ji zhaagnoshiimwad. Winwaa wdi dewendaanaawaa eta ji yaamwaad iw software ji wiidookwaawad niw edewendmowaad ji giigdowaad ge ji zhibiigewad nake entaagziwad."

Giw yak niibwaa eyaasiinaawad gegoon nake giw Ife Adebara-PHD candidate odii Department of Linguistic odii University of British Columbia wdi aabjitoon iw AI wiidookwaawad niw African kidwinan.

"Gii kendaamin niibwaa giw eta e zhaagnoshsiimwag maanjigo pii daan yaamin iw web, minwaa maanjigo waa chigeng zhaanoshiimin ndaa chigemin minwaa gtaamgwiintoonan niw wiidookaaswinan," Adebara kido. "Giw gayak ezhishitooswaad zhaanoshiimwin miigiw e mneswaad iw technological advancement."

AfroLID zhnikaade iw gaa zhitoow ow Adebara ji nstowtaagwak iw language identification tool., AI aabjichigaadegmgad ji nstowtaagwak niw kidwinan aaniwi go

mygtaagwad. Shpendaagwad iw, Adebara kido mii iw ge wiidookaagyang dowaabdamong iw web ge ji mkaamwaad giw researchers iw data, AfroLID aabjichigaade ji wzhtoong iw Natural Language Processing (NLP) miidash gewiinwaa giw African kidwinan ji aabjitoowass naasaab go ge giin.

Gaawiin denom mnik data wdi yaasiin ow Adebara ji zhitoow iw AfreLID. Bangii eta yaanoon niw documents ge aabjitoowaad giw nookiitaagnag ji yaamwaad niw entaangziyang.

"Giispin nookiyyin omaa NLP zhaagnoshiimwin, aapchi gonna gtaamgwiinad," Adebara kido.

"Washme gdi gchi nookii dowaabdamon naanin (African) kidwinan."

Adebara ge giw nookiitaagnag dbe'ing gii danikaa gi zhitoow iw AfroLID. Pii eni shkwaatad gii wiindamaage nake ge zhi dowaabdamwaad ski entaagzinid.

"Odii Nigeria enjibaayaan, zhaagnoshiimwin eta gdi kinoomaago miidash ezhi wnitooyan entaangziyang," Adebara kido.

“Pii shkitooswaad ji yaamwaad iw (technology) nake ezhi giigdowaad gaawiin wdi shkitoosiinaawaa ji giigdowaad. Gaawiin ge gdi noondwaasiinan ge wiinwaa enendamowaad. Gaawiin ge wiinwaa ji noodanng ge giinwind e nendmong. Giispin niibwaa yaamong noji wiya enendanng washme da wenpanaad wejitooyang edewendaagwak.”

“Gaawiin dash data gtaamgwiinsinon. Midash pooch go da gweksemgad iw policy.”

Gii shkjaasemgak iw AfroLID ge shki-tood ji daapnong iw data minwaa gi kendar entaagwak, Adebara minwaa nookiitagnag bakeanak AI project wdi maajtonaawaa. Niibing jii maajsemgad iw Serengeti, mii iw ensitaagemgak ge aabitoonyin ji mkaman zhnikaaazwinan ge nouns odi document. Mii iw e aabjitchtoowaad entaa giigdowaad iw African ntaagziwin.

Adebara kido Zinaagad ji kendmaon niibwaa entaagijig ji wenpanod ji mkong wiidookaazwinan. Naanind ge zinagziwag ji aazhi e kendmowaad iw giigdown. “Gaawiin piitendaagwaasnoon enweyaan naanind kidwa, washme naanin gchi piitendaagwanon Mii iw psychological effect.”

Giispin niibwa data daapnomwad minwaa nsidwinang aabjitood iw AfroLID, minq AI daapnong iw data, Adebara aabjichiganan ensitang iw zhonoshiimwin ge niw African kidwinan miigo ji shitoowaad, miw iw ge wiidookwaad bmaadziwinan ji yaamwaad

iw wiidookaazjiganan.

Apache shpendaagwad iw nookiiwin ji yaamong iw AI space.

“Pii shkitooswaad ji yaamwaad iw (technology) nake ezhi giigdowaad gaawiin wdi shkitoosiinaawaa ji giigdowaad,” Adebara kido. “Gaawiin ge gdi noondwaasiinan ge wiinwaa enendamowaad. Gaawiin ge wiinwaa ji noodanng ge giinwind e nendmong. Giispin niibwaa yaamong noji wiya enendanng washme da wenpanaad wejitooyang edewendaagwak.”

Giw gyak entaagiidowaad minwaa giw ekinoomaagzijig mii giw ge shpendaagziwaad. Gchi gweksemgad niw entaagziid noji wiya omaa Canada miidash ezhi kendjigaa-deg nake ezhi nookiimmgak.

“(Kinoomaagnag) eniigaanzijig,” Kuhn kido. “Niinwind eta ndi nookiitaagemin. Niinwind e wiidookaazyang washme ji wenpanak iw wiindamaagewin. Nsaami’ing yaawag gi enkinoomaagzijig ji biidoowaad entaaziyand ge nake ezhi bmaadziyang.” &

 **COMPUTING AND NETWORKS**

 **TECHNOLOGY AND SOCIETY**

 **GEGOON EZHKONMON**

 **EZHITOOD**

✓ Namanjinikaang: Gikino’amawaaganag gii-giizhiitaawag 2020-2011 inwewin gikino’amaagewin imaa Onkwawenna Kentyohkwa.
Gichinikaang: Owennatekha (niibawi, namanjinikaang) program coordinator zhi-gwa Gaa-gikino’amaaged imaa Onkwawenna Kentyohkwa, community-based organization that teaches gaa-de-apiitaadiziwaad awiyag Kanyen’keha.



MAZINKAAKIZON ONJI – ONKWAWENNA KENTYOHKWA

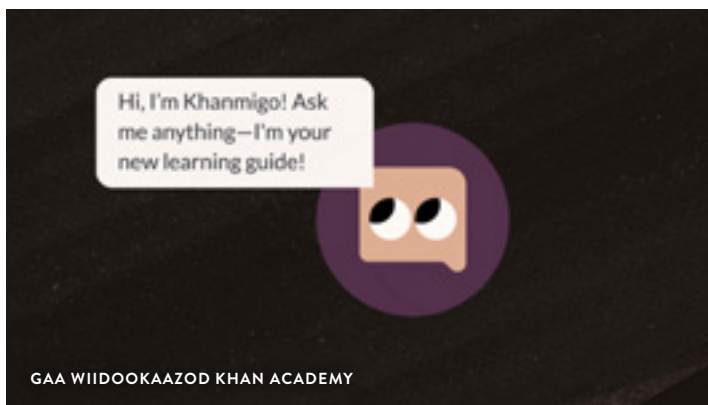




Gego Memkaaj Bzindken

Gaa zhitood

AWE CHELSEA KOWALSKI



Shaweying: Khanmigo, AI-powered tutor e wiidookwaad kinoomaagan ge ekinoomaagzijing from Khan Academy

Mii nake etemgak omaa AI chatbot technology pii gaa zhitigaadeg ge gaa zhibiigaadeg

Iw pii emaagi zhibiigaademgak iw (AI) aapchi gzhiwaaskonemgad. Gii nendmog science fiction aawong, AI-gaawiin ebmaadzid aabjichganaan nake-wdi maamkaadendaagwad noji goji. Gtaam gwiino wdi aabjitoon iw AI ji wiidokmind-waa ji wezhitoowaad ge ji wzhitooowaad mago eta ji giigdowaad.

AI nooji gegoon wdi ntowtoon ebmaadzid eshkitoosik. Washme ge wewiibtamgad daamnendaagwad nooji wiya aabjitoon. Niibwaa e aabitoowaad iw AI gtaamgwerndaagwad giibaaziwemgad dash.

AI chatbots wdi shkitoosii naawaa ji mkendomowaad ge ji kendang enaakni-geng. Wdi shkitoon dash giin ji mkendo-mowan ge ji naaknigeyin.

AI technology noji wiya wdi nendaan iw aabjichigan mkendjed. Gdaa nendaan wiin mkendjed gaawiin dash mii iw shkitoon ji

kendaang nake ge chiged pii wiidamow-ind nake iw chatbot like ChatGPT Geyaaba gtaamgwendaagwad gaawiin dash daa skitoosiin ji mekwenjiged.

Wagnen iw ChatGPT?

OpenAI gaa zhitood iw ChatGPT, mii iw e mnendaagwadk gegoon wii giishpnadooyin. Gdaa yaanan odii OpenAI's large language model (LLM) technology, GPT-3.5 (free) minwaa GPT-4 (paid). Nooji goji dagosh-noomgad iw ChatGPT pii ntam gaa waab-jigaadeg minwaa noji gegoon aabjichigade nake wzhitood niw resumes ge kendang nake ji zhiibi'ang dabaajimownan ge niw mathematical problems, debugging code. Zegendaagwad geyaabi daa aabjitoon bekaanak wiya aazhi gaa zhitood.

AI wgii zhitoon iw content ji ji wiidokwind ow ekinoomaagizid ji mkang noojigegoon chibaa maa ji zhibiiged. Iw pii dowaabdong ow ekinoomaagozid geyaaba kinoomaagozi ge wiin enandang da shkitoonji zhibii'ang. Gidaasing ge dowaabjigaadeg gegoon ge gchi makendigaadeg mii nake ezhi kinoomaagzid ow ekinoomaagozid, Pii miinad ow AI gdi miigwe kina giin pooch ge chingengban mii echiged ow AI chatbots.

Naasaab Izhichigeyan

Wegonen owe naasaab izhichigeyan?

Giishpin giimoodimad bakaan awiya onokiiwin mii iwe naasaab izhichigeyan izhinikaade.

Daabishoo iniwe:

Pii daapnamon omaa internet maago mzinignig magego wiindaamaageyin giin gaa chegeyin, maage go wiya dabamawad gi zhibiiyan mage aabjitooyin niijkiwenh mage gdanwendaagan aazhi gaa chiged.

Miina nake ow AI program enendaagwak?

Shaago gaawiin wiin wdi zhitoosiin, Niibwa kinoomaagewgamgong yaanoon e'aabjitoowaad iw AI geyaaba skini'iwgad.

Wiindamaage ow kinoomaagan gegoo wiin aabjitooken iw AI. Miish wiingo ge yaaba omaa temgak ge gdaa aabjitoon giishpin dawendamon. Kinaa go wdi kendaanaawaa odii kinoomaagewgamgong minwaa minwaa giw ekinoomaagzijing ji aabjitoowaad giishpin dewenjigaadeg, Khan wdi kendaan wnised ow chatbot Wiidookaazo ow Khanmigo ji zhitood wiya aajikaajigan nookiiwin.

Google AI ezhnikaadeg gii zhitoon LLM (called PaLM 2) minwaa chatbot Bard ezhnikaadeg. Zhaagonaa gii zhitchgaadeg ji kenjigaadeg iw Bard. Google kido gnamaa gonna da wnise ow Bard. Iw pii zhingigaadeg iw Bard mii iw ekidood niin ndi wiidookaaz ge daa wezhitoon iw email ge naa wiidookwaa ow Google Search.

Bard's wdi mchaa toon ekidood. Giishpin Bard aabjitoon wiya bekaanzid gaa zhittod mii iw website e tood. Giispin chigesnook miigo ow Bard edbendang kidoomgad gaa zhittod mii ezhi beskaamgak. Gaawiin wdi shkitoosiin ow Bard ji wiindmaaged nake ezhi nokiid. Bard pii wiidmaaged nanaangoodnong gaawiin wiin owsii ge gaawiin gyak wiidnamaagesii gegoon.

Aaniish nake ezh wiidookaazod ow AI

pii wiidookwaad niw kinoomaagnan ge ekinoomaagzijig?

Kaajikaas geken mii iw nake. Niibwa ekinoomaagzijig azhi wdi kendaanaawaa iw AI technology aazhi ge wdi aabjitoonaawaa omaa kinoomagew aachingan. Giishpin wii kendamon aabjitoon nake wiikaa ge chigeyin. Giishpin gayak aabjitooyin miigo ji ntaa kinoomaagziyin ntaa aabjitooyin.

Maanoo mii giw ekinoomaagzijig ji aabjitoowaad iw technology miigo chi ntaa aabjitoowaad iw AI ge ji shkitoowaad ji zhitoowad ge wiinwaa iw AI technology. Giishpin wejimind ow chatbot ji zhibiiyang iw dabaajmowin, nanmaa daa giigdownag ji mezhtoonmaadwaad enendmowaad minwaa daa wewiibtaawag gnowaabdomwaad gaa zhitoowaad. Abjitoong iw AI ekinoomaagzijig ni kendaaswag ge ni wiigezwag aabjitoowaad iw AI.

Midaaso-biboon odaanaang, nasine gi-gikino’amaawag gaa-gikino’amaawaganan zhi-gikenadamowaad aginjige-

***“AI chatbots wdi
zhkitooniin ji makenjiged.
Wdi shkitoon dash ji
giibaazmik wiin skhitood
ji mkenjiged.”***

win mii dash aaniish aabajitoowaad owe endaso-giizhik. Jibwaa nibwaakaa-gi-igido’biiwaabikoons ayaamagadoon, gaa-gikino’amaaged gii-ikidowazhi-gikendaman aginjigewin, gaawiin awiya owii-ayaanziin asigibii’igan daabidaa. Noon-gom dash, gaawiin geyaabi debwesinoon. Mii dash gaa-gikino’amaagewaad gwek-endamowaad. Odaanaang giishpin aabajitooyan asigibii’igan awiyan gaa-ineniminid gitimiyan, noongom dash gaawiin geyaabi debwesinoon.

Gwedwegan Aabjichigan

Machine aawon iw gwedwegan aabjichigan miidash e gwejimigoyin Wdaa shkitoon naa iw gwedwegan gi ji aawid ebmimaadzid? Giw edaajiikewaad wdi gnoonaawaan niw gwedweganan aabjitoong eniizho yaamgak embimaadzid ge gwedwegan aabjichigan. Pii gii shkwaatang gdi gwejimigo wegwen shidoog egnoonik ebmaadzid maago gwedwegan aabjichigan.

Gaawiin wiya mshi wdi shkitoosiin ji kendang wegwen e aawid. AI technology wewiibtaamgad ji giwtaashkaamgak. Naan-ind shkwaataawag niw Gwedwegan aabjichigan miigwech naa wag giw internet ge giw bots. Wenpanad iw Social Media apps

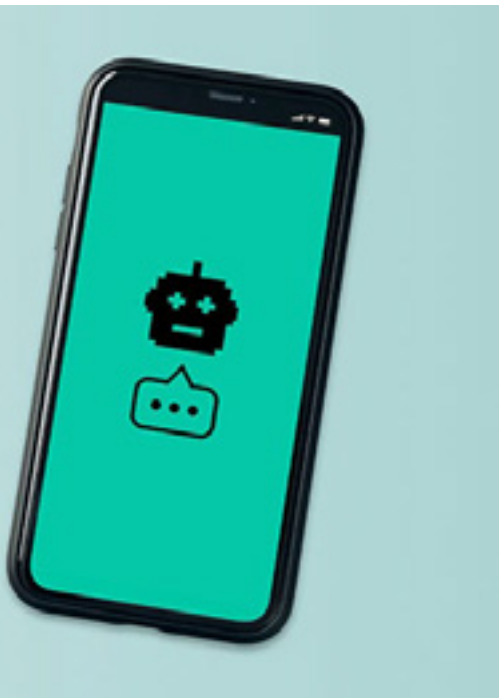
yaamon niw bots ji yaawad niijkiwenh, ji maadanad, maagego ji miinad kidwinan. Gaawiin ow bot wdi shkitoosiin ji aawid ebimaadzid wdi shkitoon wiigo ji kidod niin ndi ow. AI chatbots bekaanak kidoomgad.

Dgaa shkitoomin na ji wzhitoooyin gaazhitooon ow ebmaadzid nake gaazhitood ow AI? Gwejtoon. Niizh ezhibiigaadeg tenoon omaa gaa nkweaagemgak. Bezhiig ebimaadzid wgii zhitoon ge bezhiig ow ChatGPT (GPT-4) gaa zhitoon.

Gwedwen: Pooch na ekinoomaagzijig ge kinoomaagnag wewenaa gda chigewag aabjitoowaad iw AI?

A. Enh, wewena pooch giw ekinoomaagzig ge giw kinoomaagnag aabjitoowaad iw AI. Aanwigo iw AI ntaa kinoomaage, ge gdi miinig noojigegoon, geyaaba dgaa zhegiwebiz aabjitooyin iw data privacy ge algorithmic biases. Pooch gdi kendaan nake ezhi nookiimgak niw algorithms minwaa iw data megwaa mowndoo chigewaad. Giishpin msendmon iw AI gaawiin g’gaa gyak kwendzii. Daa daap shko aabjichigaadeg mii iw ge mnobideg.

B. Enh AI gdaa chi wiidookaagon washme aabkitoon iw naagdawendmowin ge aabjitoowad giw kinoomaagnag ge giw



- Nogoom dash AI gdaa kenmaanon nake Wizard of Oz from *The Wonderful Wizard of Oz* gaa Frank L. Baum.

ekinoomaagzjig. Aawiyin ow ekinoomaagzid gdaa wiidmaawaa ow ChatGPT ji zhitood iw dbaajimowin. Giishpin wii aabjitooyin iw washme ekendaagak AI program gdaa wiidmaagon nake gezhi zhibiigeyin ge gezhi kidyin waa zhibiimaon. Iw AI wdi shkitoon ji kidod bekanak gaa nendang wiya. Gaawiin shwiigo gaawiin giin gaanendmon. AI wdi shkitoon ji mowdonang noojigegoon ge wdi shkitoon ji zhibiiged gaawiin dash wdi shkitoosiin ji naanaagdawendang. AI wdi zhitoonan niw first drafts.

Ngii shkitoomin na ji nsidwinman gaa zhibii'ang ow AI? Gchi Nishin giispin enh kidyin! Gchi maajiishkaa ow AI wdi ni towtoon ji mkwendang ge ji kinwaabmaad niw ebimaadzinid nake ezhi ziibiiged ge nake entaagzid pii nkwetang, gaawiin dash mshi gyak chigesii. Washme nntaa nkwe-tam pii kendarang noojigegoon shwiin noji wiya enendang. Giishpin dash gwejimind enaandeg emyaa nishing? Gdaa kendaan gaa zhibbigeed ChatGPT. Gaawiin wiin ow ChatGPT daa gyak wiindmaagsii zaam nake ghazi gwedwang.

Iw pii giikaandyin pii wiya naasaab aabjitood maagego manji mkwendang mii iw pii ji miinad ow AI ji wiidookaag ji mno nend-



maakeyin. Pi gidaasyang minwaa dowaab-jigeyang ge kinomagziyang, gdi kendaamin nake ge zhi zhibiigeyang nake enendamang. Gaawiin aabjichigan wid yaaziin nend-mowin.

Bwaajigan awon iw AI. Gdi nendaamin ntaa maamikendarang ow aabjiichagan gaawiin wdi shkitoosiin. Giinwind eta entaa mkwenjigeyang. Gaawiin wdi shkitoosiin ow AI ji wzhitood ge goon panama pii wind-wowgid ji wzhitged giispin gwetood ntow wise Wizard of Oz gdaa nenmaa ow AI. &

NAKE EZHITCHGENG

COMPUTING AND NETWORKS

TECHNOLOGY AND SOCIETY

GEGOON EZHKONMON

EZHITOOD

*Paragraph A ChatGPT gaa zhibiiged

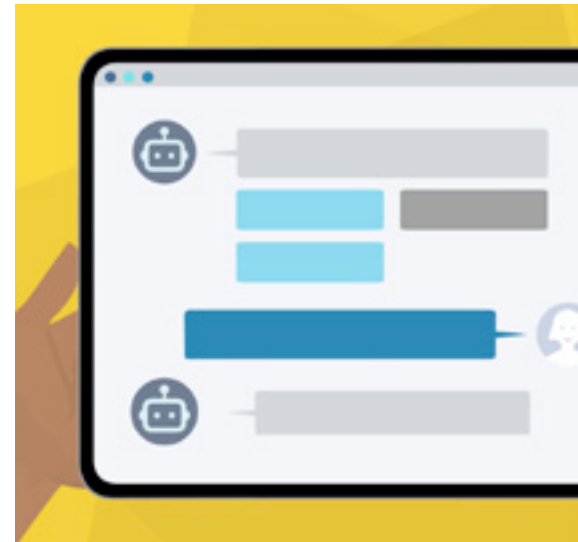


PINNGUAQ MAKERSPACE (DANAKAMIGAD)

Mii imaa bakaan gegoo gakina daa-oozhitoowaad, daa-in-
endamowaad, daa-nanda-gikendamowaad, daa-dibaaji-
moowad zhigwa daa-odaminowaad.

pinnguaq.com/makerspaces





Digital Aabjichganan

ODAANANG MAZINA'IGANENSAN

Giishpin noonde-waabandaman odaanaang mazina'iganan imaa izhaan

✦ pinnguaq.com/root-stem

RESOURCES

Ngii-oozhitoomin owe gaa-izhinikaadeg Nibwaakaa'ikaan zhigwa safety (nagagitoowan) resources zhi-aabajitoowaad gikino'amaage-wigamigong – dabishkoo lesson plans, gaa-mazinaatesijigewinan zhigwa mazina'iganensan. Gidaa-mikwendaan imaa online-ing.

Root & STEM Noondaagomichigan

Iwe gaa-izhinikaateg Root & STEM, biizhaawag awiiyag gaa-nibaakwaawaad zhi-wiindamaw gaa-gikendamawaad gegoo imaa noondaagomichigan. Owe noomaye gaa-dibaajimowaad noonde-mikawaag Nibwaakaa'ikaan zhigwa gaa-online-ayaang-waamiziwaad aaniin zhi-doodamowaad STEAM. 15-30 diba'iganensan gaa-dibaa-jimowaad imaa atewan Pinnguaq website gemaa bakaan streaming platform whatever giin gaa-gikendaman.

✦ pinnguaq.com/learn/the-root-stem-podcast

Root & STEM App

Filled with the same informative articles, podcasts, and lesson plans as its printed counterpart, the Root & STEM educational app is a free digital resource for K-12 educators and learners of all ages. Iwe app zhigwa mazina'iganens aapiji wendan zhi-mikaman gegoo. Daabida dagonigewag izhichigewinan. Giwiimikaan onowe App Adawewigamig zhigwa Google Play Adawewigamig.

Gaachidinige iwe gaa-minoseg: The Digital World Podcast

This three-episode series designed for Grade 9–12 students highlights the advantages of technology while introducing potential dangers of the online world and how to avoid them. Each episode focuses on one popular aspect of the digital world: artificial intelligence, social media, and online learning. All three episodes will explain how these relatively new technologies can benefit students in and out of the classroom, how others are using this technology, and how to implement digital safety to harness the benefits of the digital world.

✦ pinnguaq.com/learn/harnessing-the-benefits

Onanaandone'aan Nibwaakaa'ikaan

Owe mazinaatesijigan owii-waabanda'aan gikino'amaadewag aaniin gaa-maajitoowaad iwe Nibwaakaa'ikaan. Owe mazinaatesijigan dazhindaan aaniish gaa-maajitoowaad Nibwaakaa'ikaan zhigwa ongowe gaa-oozhitoowaad

Nibwaakaa'ikaan. Students learn what early models of AI looked like, what the intelligent machines of the past were, and show how far technology and AI have come in the last two decades. The video also focuses on where we currently stand with AI-powered technology and what the future holds for humans and AI.

✦ pinnguaq.com/learn/explore-AI

Ando-Gwaashkwebijigan

Gaawin minosesinoon iwe maaji-gwaashkwebijigewin imaa miziwekamig waasamoo-asab. Apii odaminoyan owe odamino'igan Ando-Gwaashkwebijigan giwii-waabandaan aaniin izhichigeban iwe maaji-gwaashkwebijigewin biijibi'igewinan. Odamino'iganing, awiya zhi-ingendang giishpin iwe zhi-minosed gemaa maaji-gwaashkwebijigewin. Giishpin gweyak-izhichigewaad gaawin gegoo wii-mikawaad apii naadazina'iganewaad!

✦ pinnguaq.com/learn/gon-phishing



Ge Wiindamowdwaa Kinoomaagnag

Pii kina maawdo naaniibwiyang omaa sa iw technological revolution, mi iw AI ge giw ewiidookaazjig nake Machine learning(ML) neural networks(NN) ninwaa iw (NLP) wdi shkitoonaawaa ji wejootwaad ji owsinook iw science fiction. Mii ezh gtaamgozwaad giw kinoomaagnag gi gyak aabjitoowaad iw ge zhi wzhitooowaad ge wiinwaa ge ji wiindmaagewaad nake ezhi mnobdeg iw AI-driven world.

Kinoomowdawaa iw AI nake ezhi aabjitchgaadeg minwaa kenjigaadeg nake. Kina go wiya e'aabjitoood miigo ji maajiish-kaamgad minwaa ji wiidookaamagak pi'iidog: machine learning

ge neural networkrks ge natural language omaa temgad mziniganing Root & STEM ezhnikaadeg. Kinoomaagewnan ge zhichgeyin temgad noji wiya ge nsitang. Noji iwiya wda shkitoon ge wiin ji wzhitood minwaa ge ji aabjityood niw aabjitchiganan.

Wiidookwaadaa kina giw aazhi ekenjigejig maanoo ji aabji-toowaad iw AI ji wiidookaazwaad bdi'iidog.

— **AYESHA AKHLAQ**

Pubbquaq nake gezhichgeng niigaanbizod

KINOOMAAGEWIN 1

Geji kinoomaagemgak niw Kinoomaage Abjichjganan

Gaa zhitood: Nia Emmanuel-Briggs

Gdi zhiikaadmon: 30 minutes

Level: 4 to 6

Naanind Links

Ontario (Grades 4-6)

A2. Coding and Emerging Technologies

- **A2.1:** zhibiigen ge aabjitoon iw code pii dowaabjigeyin ge pii aabjootyin niw aabjichjganan, nooji go aabjitoon pii nookiidmon.
- **A2.2:** kenjigaadeg ge ezhinaagwak ge zhiwebzing aabjigoong iw coding an emerging technologies pane bimaadziyin ge ewiingezyin.

A3. Applications, Connections, and Contributions

- **A3.1:** Wiindamowshinaang ge ji wiidookaagyang kina niw, ge ezhi wiingezing aabjitoong omaa aki e bookshkaag.
- **A3.2:** waagnen ge aabjitoongban bekizh ge noji go ji.

Kinoomaagewnan

- Wnsitan nake ezhi aabjichgaadeg iw AI
- Wnsitan waazhi aabjitoong pane oma bmaadziyan iw AI.
- Wzhitoon washme e wenpanak giigdownin gi kendaagwak iw Scratch 3.0 etemgak

Ekinoomaagzigjig wdaa kendaanaawaa ezhi nookiimgak iw AI aabjichgan, minwaa ezhi aabjitooyin pane megwaa bimaadziyin. Gaawin gdaa nendziin ji aabjitoong iw AI aabjichgan. Gewiin waa giw ekinoomaagzigjig wdaa zhitooanaawaa niw AI aabjichjganan. Miidash gewiin waa ji aabjitoowaad gaa kinoomaagoyin.

Kendaan: Eshpendaagwak temgak omaa kinoomagewin giw gyak washme e wiingezwaad wdaa aabjitoonaawaa.

Kidwinan

- **Artificial Intelligence (AI)** – Aabjichgan e wiindmaagemgak ezhi wiingezyd ow ebmimaadziid

Echigeng1- Mi iw AI e aawong

Kinaa gidaan ezhibiigaadeg ji kendman iw AI kinoomaagewin.

Waagnen iw AI? Artificial intelligence owaan iw AI. Mi iw Artificial Intelligence (AI)-Aabjichgan e wiindmaagemgak ezhi wiingezyd ow ebmimaadziid. Kina go nake ezhi giigdown ge mzinaazwinan, e aabjichgaadeg ji nsitaagemgak e kinoomaagoyin. Pane dash aabjichgaademgak iw AI.

Waagnen ezhi aabjichgaadeg iw AI? Nojgoji temgak iw AI! Gdi yaan naa Alexa maagego Google Home? AI wdi aabjitoonan niw aabjichjganan. Wdi nsitaan giidoyin minwaa wiindmaageyin ge jichgeng. Neyaab ge gdi gnoonig. Noogom yaamgadoon niw daabaanan ebmidemgak wiin eta, ge enstowmaagemgak gdengwy aabjichgan, washme niibwaa. Waagnen kina niw naasaab e aawong? Kinaa go jii kinoomaagziwag. Gdebwaa!!!! Wiyaa wgii kinoomawaan niw ji kendaasod.

Waa chigeng 2- echigeng: Entaagzing Giigdownin

Ambe kinoomaagzidaa nake ji kendaagomang ji aabjittoyan iw enwengang, gaa kinoomawaanaan iw aabjichgan ji maajimgak iw sprite(character) omaa nake maage shwei'ing aabjitoong kidwinanan ge zhitoooyang.

Ntaam1: Odii Zhaan machinelearningforkids.co.uk/scratch3. Mi iw ge zheyak namgak iw Scratch omaa gdaabjichigan.

Miidash 2: niisi'ing shwei'ing da temgak iw **Add extensions** zaagookan, wenaabdon **Speech to Text** odii dropdown list temgak.

Miigo minwaa 3: Megwaa aabjitooyin iw **events, motion** ge **speech-to-text**, kinwaabdon zhibiyyin niisi'ing. Mi wiindamowind ow aabjichgan ji bzingdang ge ji baabiitood ji wiindamowind ge chiged.



Kinoomow ge giin edibendmon: Migaktaawak kidwinan

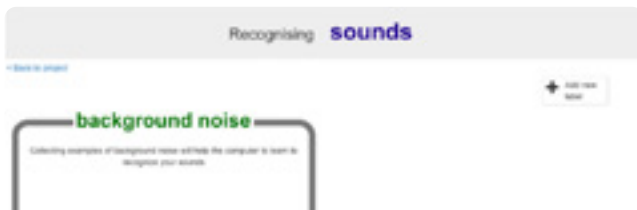
Iw ntam oma aabjichganing etemgak azhi kina wgii kendaan miw kidwinan. Midash aazhi ji zhitooyang niw migaktaawak taagzinan kidwinan gaawiin gda mkaziinan kidwinan mzinigan. Miigo ji nsidwinong aabjichgan miidash ow Sprite ji maajiid omaa nake minwaa aazhwi'ing.

Jichgen ekidoomgak niisi'ing:

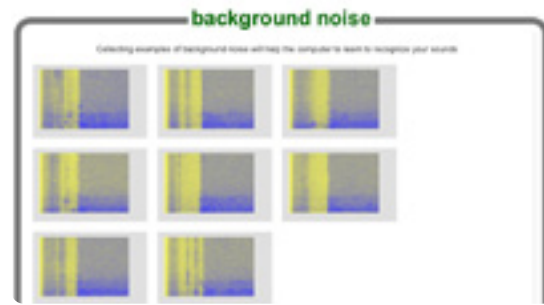
1. Zhaan odii machinelearningforkids.co.uk. Debnon **Get Started** minwaa debnon **Try is now**. Odii Project bar temgak, debnon minwaa winaabdon **New Project** minwaa wiindan iw **Alien Sounds**. Miidash ji yaamon iw **speech recognition**.
2. Niizh kidwinan zhitoon ji owang omaa ge zhwei'ing. Maanji go zhitoon kidwin naasaab go giin entaagziyin. Gego wiin wnendgen minwaa naasaab entaagziyin aabjitoon pane pii mdewetooyin. Niw kidwinan gaawiin naasab zhitooken. Iw eshkiniiwang gaa zhitooyin da temgad odii project list. Debnon iw Train zagookan ji maaji kinoomawad ow model.



3. Debnon iw **Add example** omaa **background noise** box temgak. Mii iw e mdewechgemgak kina ezhwebak omaa yaayin. Mi iw ge kendang ow aabjichgan ekidoomgak ge ebiingwewemgak.



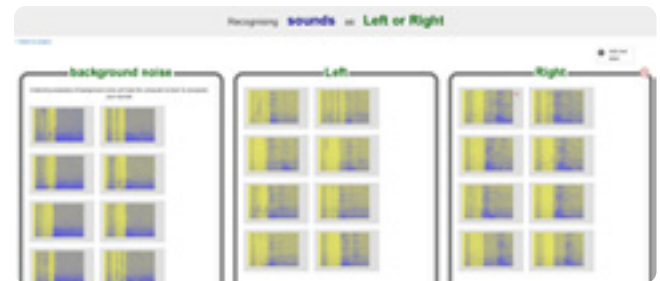
4. Debnon iw **microphone** zaagokan ji midewetoomgak niizh dabi-iswag mink miidash ji debnamon iw **add**. Nwaaswii mnik chigen miidash iw aabjichgan ji kendang enitaagwok iw ebiingwewemgak yaayin.



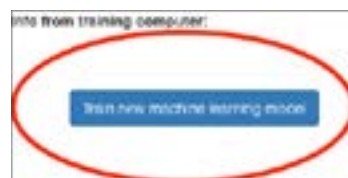
5. Debnon iw **Add New Label** zaagokan odii giiji'ing aabjichgan miidash ji wiindmon. Shewi'ing g'gaa wiindaan. Odii dash Shwei'ing debnon **Add example** minwaa ji mdewetooyin minwaa ji migaktaagwwak iw gaa zhitooyin omaa ntam 2. Nswaaswi mnik chigen. Wewenan giigdon.



6. Minwaa zhitoon omaa minwaa naanan gaa chigeyin Aabjitoon ski kidwin gaa zhitooyin.



7. Kinoomow aabjichgan ji nsidwinang migaktaawak kidwinan. Giiji'ing shwei'ing debnon **Back to the Project** minwaa debnon **Learn and Test**.



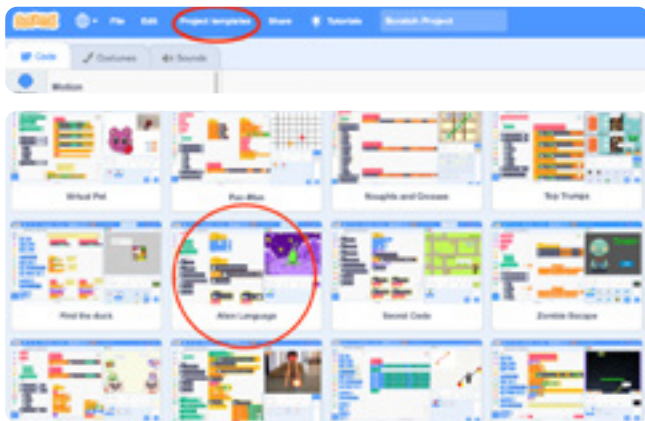
8. Gii shwaataayin, debnon **Start Listening** ji gwetchtooyin gaa zhitooyin. Gaawiindmaagoon gaa chigeyin. Giispin wii debnamon 70% washme dbei'ing mdewechitoo giigdooyin audio samples.



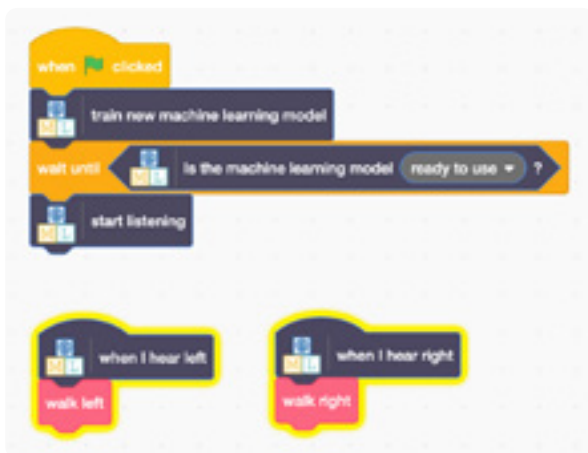
9. Pii gii yaamon edewendmon, debdon **Make** minwaa **Scratch3**. Mii ji yaanmon Scratch 3.0 ji dgoshnoowaad giw kinoomaazijig odii Scratch interface.



10. Giji'ing menu bar, debnon iw **Project template** minwaa dowaabdon iw search maago scroll ji yaamon iw **Alien Language** template.



11. Maaftaan gaa zhitooiin. Gaa waabdaan ge gijaadeg gego wiin pagdooken. Mii niw ge wiindmaawaad iw Sprite gezhi maajiid. Weztoon miidash ji zhinaagwak nake omaa niisi'ing.



12. Gwejitoon ezhi nookiimgak iw sprite ezhi chiged ekidyin. Debnon iw zhaawshkwaa gikiwe'on odii shwei'ing miidash ji giidoyin aabji-tooyin alien words. Miigo ji kendaang ow sprite ekidyin miigo ji chiged e kidyin ge ji maajiid.

Shkwaatong ge gaa ekinoomaagiin

Gii shwaaseg, giw ekimmoomaagzijig wdaa kendaanaawaa nake ji aabjitoowaad iw AI

Gwejim ekinnoomaagzijig:

- Waagnen niw ge nsitmowaad pii wiindamowad ge chiged?
- Aanish nake gezhi wiidookaagiyin pane aabjitooyin iw voice-assisted technology?
- Waagnen gaa myaa zinagak aabjitooyang iw ?
- Waagnen gaa menendamon ge gaa zhiigendmon aabjitooyin iw voice-generated AI?

Wiidookaazwinan

- Raspberry Pi Foundation niibwaa ndi yaanon gezhi mnowaazing minwaa AI wiidookaazwinan ge gnowaadjigaade (projects.raspberrypi.org/en)
- Giigdownin da mnenjgaade naasaanaa aabjiijoon niw AI aabjichaganan (forbes.com/sites/realspin/2016/10/06/voice-recognition-every-single-day-everyword-you-say/?sh=3cfa102a786d)
- Natural Language Processing and Artificial Intelligence (pinn-guaq.com/learn/introduction-machine-learning-natural-language-processing)

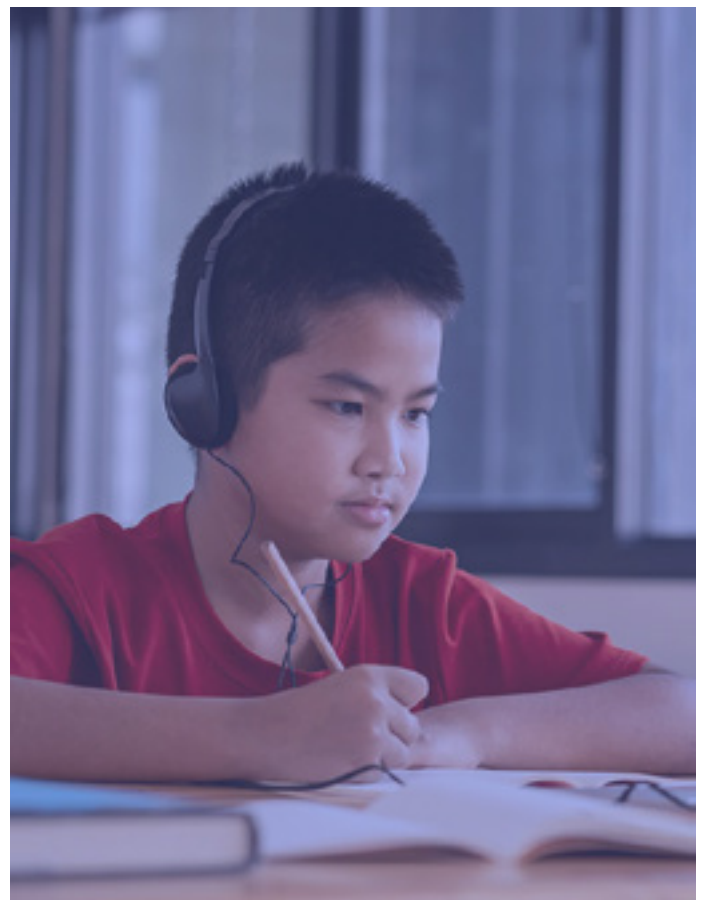
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KINOOMAAGWIN 2

Geji kinomaagemgad iw Machine Learning: NLP daa zhnikaade iw Natural Language Processing

Gaa zhitood: Ayesha Akkhlaq

Gdi zhiikaadmon: 3 x 50 minute sessions

Level: 4 to 6

Naanind Links

Ontario (Grades 4-6)

A2. Coding and Emerging Technologies

- **A2.1:** Zhibii'an ge aabjitoon noojegoon ji wjitooyin bekaanak ge aabji-too'ing goba.
- **A2.2:** Wiindan ge wiindaamaagen nake ge ji wiidookaagyn iw pane bmaadizyin, ge nookiyyin

Kinoomaagewnan

- Nsitan iw NLP
- Nsitan nake ezhi nookiimgak iw NLP nake Alexa, Google Home, minwaa Siri
- Naasaanaa gnawaabdon niw NLP tools nake autocorrect an predictive text grammar checking apps such as Grammarly, and translation tools, like Google Translate
- Nsitan nake ezhi aabjichigaadeg niw NLP tools gnamaa daa gwek-semgad ji mjimidookaagemgak

NLP da kinoomawaawag giw eknoomaagzijig nake ezh nookiimgak. Minwaa da kendaa-naawaa ge ji abbjitoowad minwaa iw aabjichigan ji kendang tag kidwinan, gezhi aabjitooyin giigdowin ge zhi yaamgak bimaadiyin.

Kidwinan

- **Ensitaagwak Kidwinan:** Mi iw e aabjichigaadeg ji kendaagwak pii giidoyin minwaa ji nsitaagwak e kidyin minwaa ji zhibiigaadeg. Ensitaagwak Kidwinan zhnikaademgad
- **Natural Language Processing (NLP):** Bangii debandaagwad iw AI mi iw ge wiidookwaad iw aabjichigan ji nsitang iw gaa zhibiigaadeg ge iw giigdowin nake ebmaadzijig ezhi nsit-mowaad

Aabjichigan

- giigdo -biiwaabkoons maagego tablets (iOS or Android)
- Laptops/Chromebooks
- Wireless internet access
- Dbajmownon maagego ngamwinan
- Zhibiigan ge mzinigan

Gechigeng 1: Waagnen iw Natural Language Processing?

NLP ezhnikaademgad Natural language processing omaa computer science temgak washme gonna artificial intelligence (AI) gdi mining aabjichigan ji nsitang iw gaa zhibiigaadeg ge iw giigdowin nake ebmaadzijig ezhi nsitmowaad. Iw NLP wdi dgonaanan computational linguistics-nake ezhi giigdood ow bmaadiz ge statistical machine learning minwaa deep learning models. Ambe goo waabdandaa miidash naanan mnik gaa chige iw (NLP)

1. Bzindan maagego Gidaan:

- **E ekidoomgak:** Naasaab bzindwaad niijkwenh giigdood maagego gidang mzinigan, aabjichigan wdi gidaan niw kidwinan gaa zhibiimon maagego wiidmow ji bzindang
- **Nake:** Pii giin gwejmad ow Siri, "Aanish ezhwebak kojiing noogom?", pooch wda noondan maagego da gidaan egwejmind.

Bookbidoon :

- **E kidoomgak:** Wdi aa'aaptoonon ow aabjichigan washme ji gaashiiwang niw kidwinan. Nake pii gaa kinomaagoyin niw nouns, ge verbs, adjectives odi kinoomaagewgamgong.
- **Nake:** Gaa gwejmigooyin, "Aanish ezhwebak kojiing noogom? Aabjichigan daa bookbidoon ji kidoomgak "Waanen", iw "Ezhwebak?" kojiing "noogom."

3. Nsitmon e Kidoomgak:

- **E kidoomgak:** Pooch aabjichgan na kendaan enid ji chiged minwaa ji nsitang.
- **Nake:** Pashkwaanaajiinh bimiso nangodnong ge gi aabjitoon iw kidwin ji wiinan iw mtig e aabjitoowaad pii, bkwaakidikeyin. Maan-jigo daa owan noun maagego verb. Wdi shkitoon ow aabjigan ji nsitang waangen iw waa gyaksing.

4. Mkwengaadeg gaa gwejmigooyin:

- **E kidoomgak:** Pii nsitang ow aabjichgan edawendmon, wdi mkwendaan gyak chi wiindamaag, Nake giin makwendaanmon waa kidyin.
- **Nake:** Pii gii nsitang iw ezhwebak kojiing wdi dowaabdon goji ezhwebak kojiing noogom

5. Wiindamaagewin:

- **E kidoomgak:** Gegpii, aabjichgan gdii wiindaamaag gaagwejmad, daa zhibiige maagego gdaa gnoonig.
- **Nake:** Siri namaa daa kido, “Mno giizhgad kojiing noogom minwaa daa niizh tana shi niizh wii naate nogoom.

Ge chigeng go baa : Mkaanii wiyaa daa zhnikaademgak iw kidwin!!

- Miizh ekinoomaagzjig niibwaa kidwinan naasaab ejinaag-wak(pashkwaanaajiinh, zhoonyaa gamik, ge mgin).
- Gwejim di nendamowaad nake iw aabjichgan miidash ji zhitooyin gezhi kendang ow aabjichgan ekidyin. Nake “, Zhoonyaa gamgoon ndi toon zhoonyaa” iw gyak zhoonyaa gamgong da kenjigaade e aawong gaawiin odii ziigjiwang tibew daa yaasnoon zhoonyaa.
- Minwaa go minwaa mkendan, ge zhi wniseemgak iw aabjichgan, Nake iw “Pashkwaanaajiinh ge bkwaakidikeyin nasaab aawon bezhig bmiso gezhig ge bkitegaans owan. Miigo gewiin iw mgin ge nagek bezhi nimosh mgid bezhig mtik wiigop.

Gdaa shkitoon ge giin ji zhitoonyin naasab giishpin kinwaabdamon iw:

Segmentation zhinkaademagad iw e bzindmon ge e gideon. Bokbi-doon wewenaa zhibii'an ji nsitaagziyin.



Tokenizing: Ji kendang ow aabjichgan pooch gdi bookbidoonan kina niw kidwinan bebezhiig. Mii iw ezhnikaadeg iw tokenizing.



Zagaknan niw dookshkaa kidwinan: mi iw ge aabjichgaadeg pii kina kidwinan e aabjitooswan omaa zhibiigewin, nake minwaa, ge, biiji'ing. Pii chigeng iw aabjichgan da waabdaanan eta niw kidwinan em yaa mshkawaag. Mii iw dakookaan e zhinkaadeg.



Niw naanind kidwinan nake iw aawon verb kina NLP di kendaanan, midash iw dookshkaan kidwin naanind gaawiin wdi aabjitoosiinan omaa kidwinan etamgak. Nake “Mookesenoon waawaaskoneyan gtigaaning” geyaab kidoomgak omaa aabjichganing.

Stemming: Iw pii aabjitooyin niq suffixes ji washme chigeng iw kidwin mii iw ge nsitang aabjichgan.



Part of Speech Tagging: Mii dash ji dowaabdamon niw nouns ge verbs ge adjectives ge prepositions minwaa adverbs. Mii dash ji maadonmon:



Mi iw skwaaj omaa NLP, mii iw ji kendang ow aabjichgan e gwejmind. Mii dash nkwetang.

Named Entity Tagging: Mi omaa kinomowind ow aabjichgan gi nsit-winang niw nouns, minwaa odenaa, minwaa egchi piitendaagzid wiya. Wdi skitoon ge ji wesidood aanish mnik ge e owiyin ge eyaayin. Nake *Canada*, *Gchi Mookmaankiing*, ge nini ezhinkaazod *John*, *Miranda* mii niw proper names ezhinkaadeg miidash AI ekidoomgak “Named Entity,” Minwaa nake pii gwejimad ow Siri, “Aanish ezhwebak odii Montreal noogom? Siri dash wdi kendaan *Montreal* owang proper name miidash wiindmak ezhwebak odii.

Gechigeng 2: Dgonan e Kenjigaadeg

Gwejim giw ekinoomaagzjig ji:

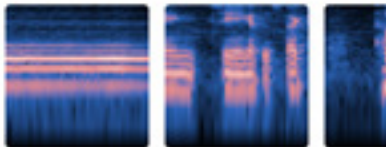
- Wenaabdon ngamwin maagaago naajmowin maagaago ndaa zhitoon naajmowin,
- Bookbidoon kina wesidoon ji yaamgak giigdown ji nsidwinman mii ge chiged ow NLP.
- Wesidoon kina niw kidwinan ji nsitman ge ji kenmon e aawon. Nake gonaa, kina verbs, nouns, adjectives, minwaa niw proper names daa wesijgaadenoon.

Minwaa dewendmon gegoon odi zhaan pinnguaq.com/learn/inuit-principles-of-conservation-serving-others.

Gechigeng 3: Kinoomaagewnan Aabjichiganan

Mii imaa giw e kinoomaagzjig ji aabjitoowaad kina niw aabjichigan gi aabjitoowaad iw aabjichigan ji wiinaad wesiiyan ge bneshiinan entaagzinind mii iw ge zhitoowad.

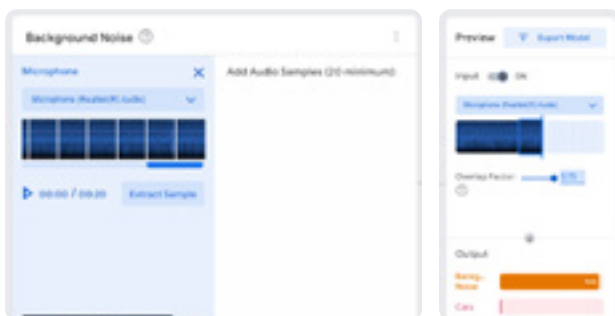
1. Zhaan odii Kinoomaagewnan Aabjichiganan (teachablemachine.withgoogle.com) and click the **Get Started** button. Choose **Audio Project**.



Audio Project

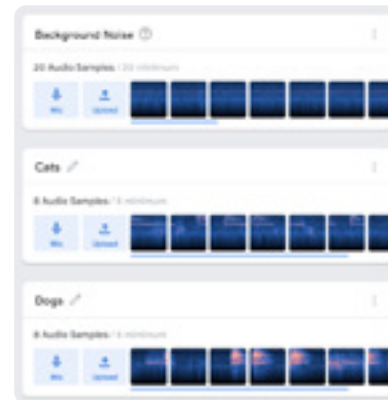
Teach based on one-second-long sounds, from files or your microphone.

2. Pii gii biindgeyin omaa, debnon iw enoondman yaayin. Maano niizh tana da bimibdemgad, Miidash ji nsitang ow aabjichigan megwaa bimibeg bekaanag yaad.

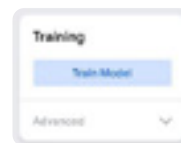


3. Pii gii shkwaataayin miid dash ji yaamon wesii entaagzid (nimoosh, gaazhag). Gdnwendaamin ji kendang ow aabjichigan gi nsitwaad niw wesii'an.

4. Noojigo nimoosh entaagzid aabjitoon miigo naasaab gaazhag ge chigeyin miidash ji tooyin omaa aabjichiganing. Nwaaswi minik gaazhag ge nimshag yaaw miidash ge zhinaagwak:



5. Debnon iw **Train Model** maanoo dabmibde iw aabjichigan kinaa ji kendang omaa biiji'ing etemgak. Jinaa eta gdaa baabiw.



6. Pii ow aabjichigan ji shki'ewzid bekaanak weesii mdewetoon ji kenmond ezhi nitang ow aabjichigan. Gnowaabdon iw **Output** zaagokan, ji waabdamon e kidoomgak.

Shkwaatong ge gaa ekinoomaagiyn

Pii gii shkwaatang giw ekinoomaagzjig wdaa kendaanaawaa zhi skitood ow aabjichigan ji nsitaawaad wesiiyan ge bneshii'an ge wgi-bmaadiwnan, miidaash ji doowaabdong odi AI ji aabjitoon pane bimaadzid. Gwejim giw ekinoomaagzjig:

- Aanish nake gezhi aabjitooyin iw AI ji mnoyaayin? Aanish nake ge zhi wniseemgak?
- Waagnen giinwaa ghazi kenmeg iw pii gaa aabjitooyeg iw AI?
- Aanish nake ge ji aabjitooyang iw AI washme ji mnoyaayang?
- Waagnen naa ge chigengo ban washme ji mnoyaayang?
- Oondi ge gi aabjitoongban iw AI?

Wiidookaaswinan

- Introduction to Machine Learning (pinnguaq.com/learn/introduction-machine-learning)

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KINOOMAAGEWIN 3

Kinoomaagemgad Aabjichigan: Enstownaagemak Mzinaazwin

Gaa-ozhibii'iged:

Nia Emmanuel-Briggs

Gdi zhiikaadmon: 50 minutes

Level: 7 to 8

Naanind Links

Ontario (Grades 7-8)

A2. Coding and Emerging Technologies

- **A2.1:** zhibii'an minwaa aabjitoon iw code ji dawaabdamon ge pii aabjitoong iw modelling concepts, ji zhiton bekaanak outputs ge minwaa niibwaa ji yaamgak niibwaa ge aabjitooyin.
- **A2.2:** Nstownsan ge wiidnaamaa-gen ezhi yaamgak iw coding ge emerging technologies pane aabjitoong

A3. Applications, Connections, and Contributions

- **A3.1:** Dbaadan nake ge zhi aabjitoonban iw science an technology nokiwigamgong. Minwaa dagonana e wiingezid nookiitagan ge nake gezhi aabjichigaadeg ji weshtoong ebookshkaag
- **A3.2:** dowaabdan nake gezhi wiidookaazod ow science an technology bekaanak e'aabjitoojig weahidoowaad gaa bookskag

Kinoomaagewnan

- Dowaabdan gezhi kendang ow aabjichigan ji nsidwingang mzin-aazwin
- Wzhiton Rock, Paper, Scissors dazhiikewin odi Scratch

Kinoomaagzijig da kinooma'awag ji nstownomwaad mzinaazwinan. Wdi zhitoonaawaa ji nstownang ow aabjichigan mzinaazwinan ge nake ji dazhiiked iw Rock, Paper, Scissors.

Ikidowinan

- **Gaa-gikendak ogwiingenan:** Owe mazinaabikiwebinigan zhi-gikendak ogwiingwen zhiigwa aabajichigan
- **Mikaman:** Owe computer zhi-mikaan ogwiingwen biinji'y Nibwaakaa'ikaani mazinaatesijigan
- **Gweyakisan:** Owe computer zhi-onisidawinang bebakaan gegooan
- **Gikendaman:** Owe computer gweyakisan ogwiingwan
- **Onisidawinan:** Owe computer zhi-gikendang awenen gemaa wegonen biinjaya'ii mazinaatesijigan

Gezhitigeng 1: Zhi-gikendamaang gaa-gikendak ogwiingenan

Wegonen iwe gaa-gikendak ogwiingenan? Aandi abaajitoyan? Gaa-gikendak ogwiinwenan apii owe computer zhi-mikang ogwiingwan gemaa aabajichigan imaa database Bebakaan izhichigewinan owe computer wii-gikendang gaa-gikendak ongwiingwenan. Achigaade owe omaa: **Mikaman**, **Gikendaman** zhiigwa **Onisidawinan**.

Mikaman: Owe computer zhi-mikaan ogwiingwen biinji'y Nibwaakaa'ikaani mazinaatesijigan Wiikaa na gi-gii-aabajitoon gigiigidowaabikoons zhiigwa gii-wabandaman iwe makakoons ogwingwaning. Apii iwe computer gaa-nisidawinang owe ogwingwan zhi-mazinaatesijigewin gwayak.

Gikendaman: Owe computer gweyakisan ogwiingwan Iwe computer o-gagwe-gikend-aan aandi gaa-atewan gakina gegoo imaa ogwiingwan dabishkoo oshkiinzhiigoon, ojaan, zhiigwa odoon. Maagizhaa gigiwaabandaan imaa iwe technology dabishkoo Snapchat. Imaa gidaa-aabajitoon bakaan gwingwekaanan mazinaakiziganing.

Onisidawinan: Mii owe computer Onisidawinan gwayak awenen awe zhiigwa gegoo mazi-naakiziganing. Aazha gigiwaabandaan owe Onisidawinan Ogwingwan apii aabajitoyan gigiigidowaabikoons gemaa bakaan aabajichigan. Mii iwe naasaab technology waa-aabajitooyan imaa ge-izhichigewin.

Task 2: Ozhitooan odamino'igan – Asin, Mazina'igan, Moozhwaagan

Aazha ngikendaamin aaniish waabandaaniwaad baakan (technology) gwiingwaninan, niwii-ozhitoomin gegoo dabishkoo gininj-izhinaagoziwaad zhi-odaminoyaang Asin, Mazina'igan, Moozhwaagan. Aabajitoon gigiigidowaabikoons, aapiji onzaam zhi-mazinaakizigeyan.

Dakon 1: Izhaan machinelearningforkids.co.uk. Maagonan **get started** mii dash maagonang **Try it now**.

Dakon 2: Click on the **Projects** bar at the top of the page, then click **Add new project**.



Dakon 3: Imaa “Project Name,” ozhibii’igen **Asin**, **Mazina’iganens**, **Moozhwaagan** zhigwa niisaan “**Recognizing**” maagonan **Images** zhigwa “**Create**.” Mii imaa “**Projects**” wii-mikaman **Asin**, **Mazina’igan**, **Moozhwaagan** odamino’igan.

Dakon 4: Gaa-gininj-izhinaagoziwaad biinjay’ii niwii-atoomin imaa (computer) zhi-odaminod. Maagonan imaa “**Train**.”



Dakon 5: Maagonan “**Add new label**” imaa wiikwewan gwiingwan iwe (computer). Wiindan “**Asin**.” Imaa asin makak maagonan “**Webcam**.” (mazinaakiziganens) Midaaching mazinaakizigen gininj daabkishkoo zhi-izhinaakozid asin. Mii iwe (computer) waabandang ongowe bakaan izhinaagoziwaad mii dash bebakaan akeyaa mazinaakizanaadwaa asiniig.



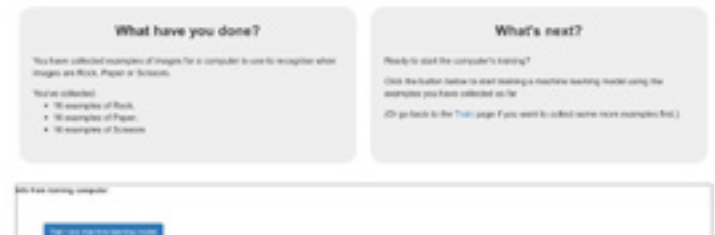
Dakon 6: Apii gaa-giizhitooyan izhaan imaa **Add new label** zhigwa miinawa izhichigen naaning iwe “mazina’iganens” zhigwa “moozhwaagan.”

Dakon 7: Aazhaa, niwii-gikino’amawaanaan owe computer zhi-nisidawinang izhininjiinid. Imaa ishpimiing amanginikaaning wiikwewan

maagonan **Back to project** zhigwa maagonan “**Learn & Test**.”



Dakon 8: Click on **Train new machine learning model**. This may take a few seconds.



Dakon 9: Apii gaa-giizhitooyan gaa-gikino’amaagediwan maagonan “**Test with webcam**” zhi-waabandaman giishpin computer onisidawinang “asin,” “mazina’iganens,” zhigwa “moozhwaagan.” Owe “confidence score” giwii-wiindamawig giishpin computer gaa-nisidawinang izhininjiinid.

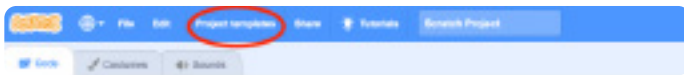


Giishpin miinawaa noonde-izhichigeyan, maagonan **Go back to project** zhigwa **Train** owe computer miinawaa dagon mazinaatesijigewinan.

Dakon 10: Apii niizhwaaso midana gaa-ayaayan maagonan **Make** zhi-baakinaman **Scratch**. Maagonan **Scratch** zhigwa weweni anamichigeyan aaniin zhi-doodaman.

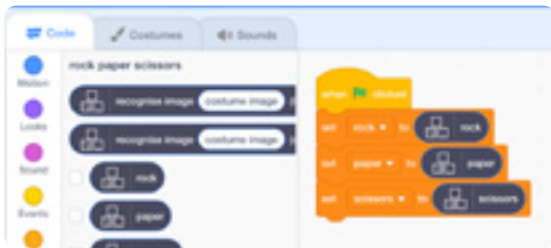


Dakon 11: Wii-baakise Scratch 3. Ishpiming dagobii'igan, maagonan **Project templates** zhigwa onanaandawaabandaanan **Asin, Mazina'iganens, Moozhwaagan** onaabaabandaaning.

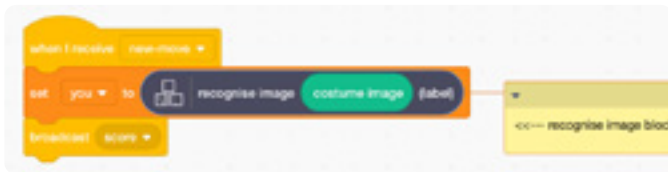


Dakon 12: Wii-naagwan computer mazina'iganensan – gego webinige-ken onowe! Maagonan imaa **You** gaa-izhiseg niisaan gichinikaaning imaa page.

Dakon 13: Aanjibii'igen daabishkoo zhi-izhinaagwad computer mazi-na'iganensan niisan gakiwe'oning.



Dakon 14: Aanjibii'igen daabishkoo zhi-izhinaagwad computer mazi-na'iganensan niisan gakiwe'oning.



Dakon 15: Odaminon iwe Asin, Mazina'iganens, Moozhwaagan computer. Maagonan imaa gakiwe'oning zhigwa **press the letter P** imaa maamaagowebinigan zhi-mazinaakisijigeyan. Owe computer owii-gagiiginaan zhi-odaminod; asin, mazina'iganens, gemaa moozhwaagan.

Gidayaana awiya niba Nibwaakaa'ikaan ikaan zhi-odoodaminwaageyan Asin, Mazina'iganens, Moozhwaagan. Giwiibakinaadan giishpin niizhing bakinaageyan!

Mii'iwe

Gi-mino'chige! Aazha gigikendaamin aanish computer zhi-onisidawing mazinaakisijigeyan, zhi-gikendang, zhigwa zhi-odaminod Asin, Mazina'iganens, Moozhwaagan!

Gwegim giw ekinoomaagzijig:

- Wegonen gaa-waabandaman apii gaa-doodaman owe?
- Aaniin apii computer gwayakendang zhi-doodang owe?
- Aaniin daa-inendaman anjibimaadiziwin onisidawanan ogwiingwanan?

Aabajitoowinan

- Ogikinoo'amawaan Aabinoojiiyag Nibwaakaa'ikaan (saturday-kids.com/blog/teaching-kids-artificial-intelligence)
- Gaa-Technology-Gikendamaad Aabinoojiiyag (machinelearningforkids.co.uk/#!/worksheets)
- Onisidawanan Ogwiingwanan (nytimes.com/wirecutter/blog/how-facial-recognition-works)
- Introduction to Machine Learning (pinnguaq.com/learn/introduction-machine-learning)



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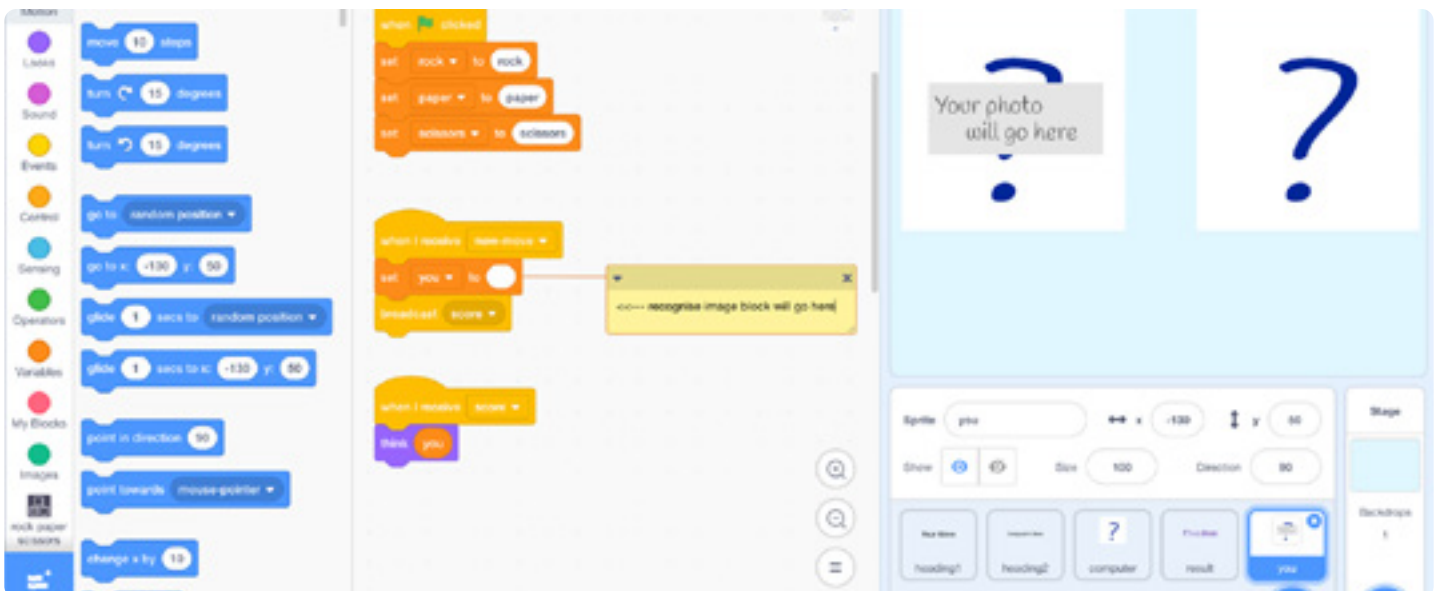
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KINOOMAAGEWIN 4

Myaktaazid ge Naasab Entaagzid

Gaa zhitood: Ayesha Akkhlaq
Gdi zhiikaadmon: 3 x 50 minute sessions

Level: 9

Naanind Links

Ontario (Grades 9)

- **A2.1:** wzhitooon maagego gwetoon nake iw STEM nookiwin ji makmon ge mkaajigaadeg
- **A2.2:** wiindamaagen nake gezhi wiidokaamgak odii nookiwin
- **A2.3:** wiindamaagen nake gezhi wzhitoyin ge gezhi aabjitooyin omaa aki'ing
- **A2.4:** aabjitooyin kina niw scientific literacy skills pill dowaabdamon ezhiwwebak omaa kina aki'ing.

Ge Kinoomaagemgak

- Ga kendaan e aawong niw Myaktaazid ge Naasab Entaagzid
- Kendan gezhi kenjigaadeg nake ezhi aabjitooyin megwaa bmaadziyan
- Gezhi webziyi pii zhitoooyin iw myaktaazid
- Nake gezhi aabjitoong iw assistive technology omaa commerce, health, banking and security
- Nake gezhi gnaawenjigaadeg ge ezhi kenjigaadeg iw digital citizenship

Ekinoomaagzijig wdi gnawaabdaanaawaa ge wdi zhitooanaawaa e'myaktaagwak aabjitoowaad iw MIT App Inventor. Ekinoomaagzijig wdi gnawaabdaanaawaa nake iw naasaab entaagwok minwaa nake ezhi wenpanak ji wniseyin ge ezhi niizaanak minwaa ezhi kendaawak dbi'iidog nogoom, mewzhja omaa bmaadziyang.

Ikidowinan

- **Text-to-speech:** Gidaaso getin zhinkaadwemgad iw Assisstive technology
- **Speech-to-text:** Wdi shkitoon gi aanjtood iw enoondamon ji zhibiigaademgak (ASR) ge zhnikaademgad iw automatic speech recognition
- **Speech Recognition:** Aabjichigan wdi shkitoon gi noodang iw giigdown mNinwaa ji aanjtood ji zhibiyyang
- **Naasaab Entaagwak:** Mzinaaziganan ga aanchigaadeg ji kiidoomgak gii gaa chigeyin aanogo gii chigeswan

Aabjichiganan

- Phones or tablets (iOS or Android)
- Laptops/Chromebooks
- Wireless internet access

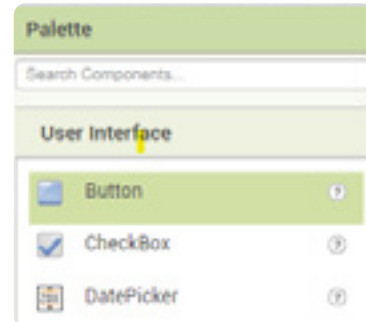
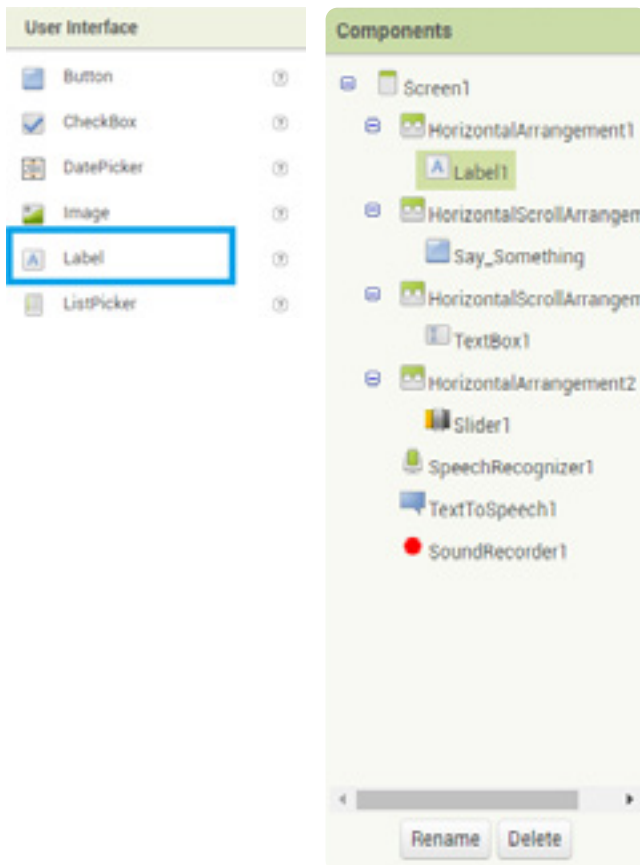
Myaktaagwak App

Gdanwenmigoo ji zhitoooyin iw emyaktaagwak aabjitooyin iw MIT App Inventor ji waabydweyin nake ezhi zhitoooyin minwaa ge ji kendaagwak iw giidowin ge zhibiigewin. Pii gii shkwaataayin, maajibidoon iw zagakokan ji aanjtooyin enitaagzid. Mi iw text-to-speech e'aawong.

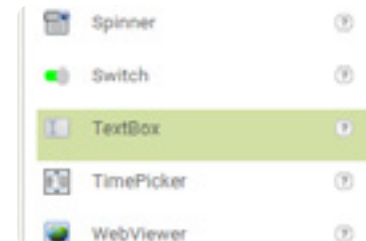
Ji maajtaayin, toon iw MIT A12 Companion app omaa aabjichiganan (play.google.com/store/apps/details?id=edu.mit.appinventor.aicompanion3&pli=1) Maajtaan ji wzhitoyin iw design interface and basic functions of the app.

1. Zheyaaknan iw aabjichgan, zhdseyaaknan iw MIT App Inventor (appinventor.mit.edu) mii dash gi debnamon iw **Create Apps!** giiji'ing temgad iw zagakokan. Mii iw ge zheyaaknan iw generator interface.
2. Zhaan odii temgak iw Project zagakokan giiji'ing etemgak mii odii ji zhitoooyin eshkin'imgak. Wiin'an. Niinwind **Welcome to Fake Voices** ndi zhlnikaadaamin.
3. Giishpin dewendamon, aabjitoon iw **Properties** omaa shwe i'ing ji aanjtooyin enaandeg ge nake gezhi zhibiigeyin.
4. Omaa temgak iw **Palette** dowaabdan iw **User Interface**, **Layout**, ge **Media** zagoknan ji aabjitooyin waa zhitoooyin. Niinwind kinaa nwii aabjitoon in ji wzhitoyeang.

5. **Layout** g'gaa maajtaamin, miidash ji dogoshnang odii **Horizontal Arrangement** zagokan temgak (nasaab go smartphone zhinaagwad) mii omaa ji temgak niw user interface zagokaasan. Nake iw image placeholder oma PowerPoint gdaa toonan niw Horizontal Arrangements miigo minwaa ji tooyin ji waabjigqadeg niw ski interface blocks for the app.
6. Miigo minwaa omaa **User Interface** zagokan odii ji maajtoon **Label** block ezhinkaadeg naami'ing Horizontal Arrangement 1. Gaa waadaan shki Label1.
8. Omaa **Layout** panel shwei'ng toon iw **HorizontalScrollArrangement** naami'iin da yaamgad iw **Welcome to Fake Voices**.
9. Miidash iw **User Interface** panel temgak, maaji ow zagokan ji wisad odii **HorizontalScrollArrangement2**. Wenaabdon iw zakokgan ji yaaman iw text **Say Something**. Mii iw ji wiindaamaagemgak ji maajtaang bjiinag gii debnamon, Bekaanak aabjitoon.

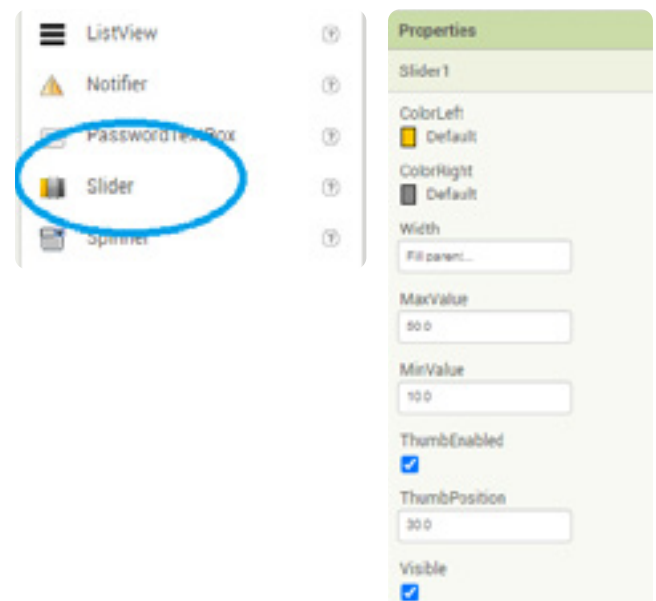
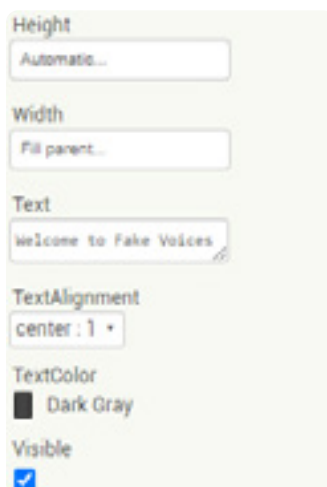


10. Iw gayak **HorizontalScrollArrangement** placeholder temgak maajii-toon odi **TextBox** temgak iw **User Interface** nsing ji aawang.



11. **HorizontalScrollArrangement** mii iw placeholder ezhinkaadeg majii-toon iw **Slider** goji **User Interface** shwei'ng toon. Wenaabdon iw **Slider** odi **Components** zagokan teg miidash odi **Properties** ji yaayin, wiindamow ow **MaxValues** ge **MinValues**. **MaxValues** da dookshkaa omaa naanmida ge **MinValue** gewiin midsaaswi. Mii imaa ji temgak pii slider toggle bi naagwak. Minwaa gnowaabdon iw **ThumbEnabled** box. Ni ge kendang pii maajiimdengak iw slider omaa nake minwaa aazhwi'ing.

7. Wenaabdon iw **Label1** minwaa **Properties** zagokan, dognan iw **Welcome to Fake Voices** omaa **Text** box.



12. Shewi'ing temgak iw **Palette** wenaabdon iw **Media** zagokan maajii-toon odi **SpeechRecognizer** ge **TextToSpeech** temgak, minwaa **SoundRecorder** miigo minwaa bgidnan odi ji waabjigaadeg. Yaanoon omaa niw e gaaziimgak midash wiingo nookiimgak. Wdaa shkitoon ji noondang pii mdewetood minwaa wdi nsidwinaan giigdownin ge wdi shkitoon ji aabjitoon iw text-to-speech ge iw thumb slider omaa tenoon shewi'ing.
13. Ji wzhitooyin iw code ge miingoyin iw app echigemgak, zhaan odii **Blocks** temgak odii eyaamgak giiji'ing. Wdi zheyaaknan iw waas-eschigan, odii ji wi bgidnamon iw code blocks, ji nookiimgak iw app.
14. Wenaabdon iw **Say Something** block from the block panel midash ji yaayin odi the **when say something**. Click block Debdon gopii nsaa-mi'ing temgak.
15. Oodii temgak iw **SpeechRecognition** zagokan, zhaan **Call-SpeechRecognizer1**. **Gettext** minwaa **Call SpeechRecognizer1**. Stop. Dookshkaan Toon odii **Say_Something** code block. Mii ji nsownang giigdownin bjiinag go maaji giigdownin.
16. Pii gii nstowndang giigdownin wiindamow ji maaji zhibiiged. Pii yaamon iw ezhibiigaadeg nsaa-mi'ing iw code area toon: From the **SpeechRecognition** tab, use **WhenSpeechRecognizer1. AfterGettingText** code block.
17. From the **TextToSpeech** tab, use **TextToSpeech1**. Pitch to code and snap it inside the **SpeechRecognizer1. AfterGettingText** code block.
18. From the **TextToSpeech** tab, use call **TextToSpeech1. Speakmessage** code block and snap it under the **TextToSpeech1**. Pitch block.
19. Maanoo ow waawaabganoojiineh (mouse on computer) da zhaa odii ezowminaadeg zaagokans gopii get **results** block yaamgak. Snap it to the **TextToSpeech1. Speak message** block.
20. Odii zhaan temgak iw **Math** giiji'ing temgad omaa palette miidah iw 0 block ji tooyin odii code area teg. Ngadan odii **TextToSpeech1**. Pitch ji ngaamadooyin iw code block. Bekaanak aabjitoon gaawiin 0. Niiwind ndi aabjitoonin 2.
21. Wzitoon minwaa ji aansidooyin iw enewemgak. Maajtaan omaa **Slider** zagokan temgak omaa wi bgidnan omaa **Slider1. Position-Changed** ji dookbidemgak iw viewer block area. Maajibij ow mouse ji gaanak ow **thumbPosition**. Niish dash g'gaa waabmaag code blocks. **SetThumbPosition** miigo minwaa ji ngadmon omaa code black. Aabjitoon iw **Slider1. ThumbEnabled** and **Slider1.MinValue** odii temgak **Slider** miidash giishton iw code.
22. Oodii temgak iw **sound recording** zagagokan, aabjitoon **When-SoundRecorder1. Started Recording** minwaa pii **SoundRecorder1. StoppedRecording** to the viewer area. Drag and drop **CallSoundRecorded1**. Start and **CallSoundRecorded**. Stop in the code. The code will snap into place.
23. Mii ji shkwaa abjitooyang iw text box. Wenaabdon **TextBox1** from the left-hand panel. Drag and drop **when.TextBox1.GotFocus** to the code area. Gdaa dawendaamin iw text box to be able to convert text to speech. The code blocks needed can be found in the **TextBox1** tab. This will allow the app to perform text-to-speech functions.
24. Aame dash todaa iw code odii sound recorder and our code mii dash ji shkwaataayang. Odii zhaan **SoundRecorder1** tab.

Maajtaadaa to test your app. Zhaan odii Google Play Store or Apple Store to download the **MIT AI2 Companion** app to your phone.

Odii temgak iw the app inventor, dowaadon ge debnon iw the **Connect** button in the menu bar giiji'ing of the screen. From the dropdown menu, debnon **AI Companion**. It allows the app to connect via a QR code. Scan the QR code and connect the app with the MIT AI2 companion on your phone.

Maanoo giw ekinoomaagzijig da gwejitoon naawaa iw app functionality and wezhtoowaad the bugs in the code as they test the app.

Skwaataamgak ge gaa Mkaajgaadeg

Gnoondiyok pii gii shkwaataayeg ji wiindaamaageyeg nake iw myakta-agwak geji mjidoodangaabjichgaadegak. Gwegim giw ekinoomaagzijig:

- Aaniish nake kina giw health care, commerce, entertainment, etc., e'aabjitoowaad iw voice-generated AI minwaa nake ezhi wiidook-mindwaa aabjitoowaad iw?
- Wiikaanaa gdi waabdaan iw myaktaagwak omaa online? Aaniish nake gezhi wniseemgak aabjitooyin oma internet?
- Aaniin nake gezhi wiidookaagyin ge gezhi zhewebnigooyin iw AI-generated media, nake iw myaktaagwak, minwaa nake ezhi wiidookaazwaad giw e aabjityoowaad?
- Aaniish nake ge zhi biimskoyaamgak iw myaktaagwad naagaj?

Aabajitoowinan

- Introduction to Machine Learning (pinnguaq.com/learn/introduction-machine-learning)



NAKE EZHITCHGENG



COMPUTING AND NETWORKS



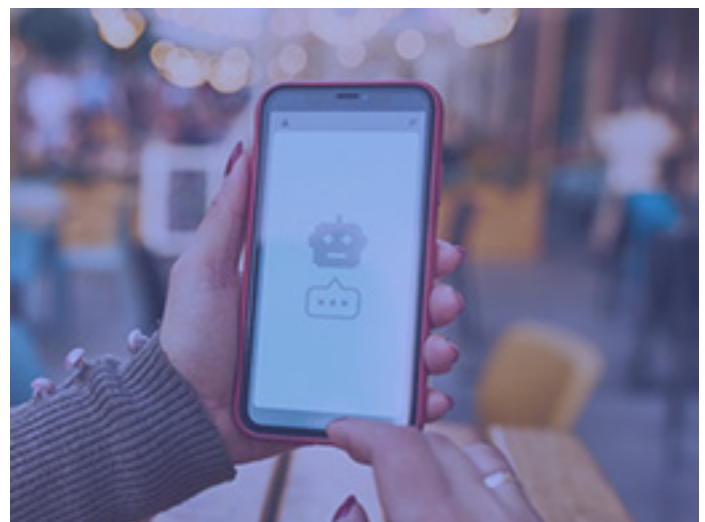
TECHNOLOGY AND SOCIETY



GEGOON EZHKONMON



EZHITOOD



ROOT & STEM

Neyab Babaa- ayaamagad

GA KINA GEGOO NOONDAAGOMICHIGANAN

MAZINA'IGANENSAN

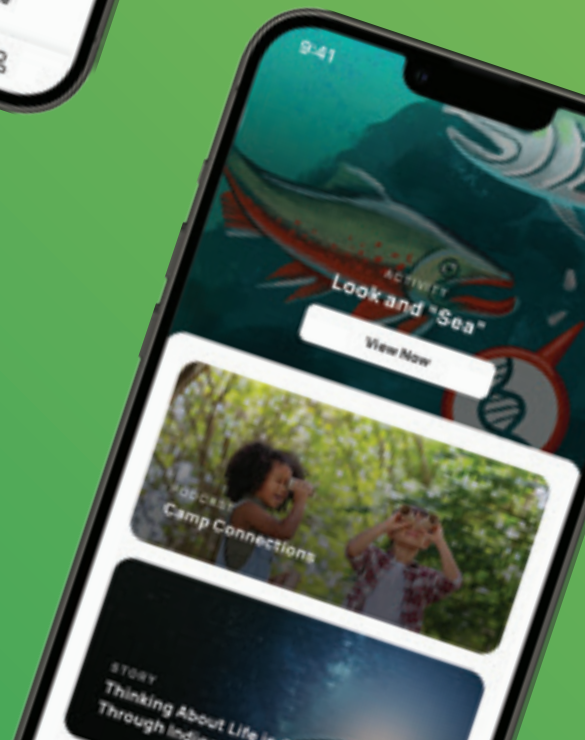
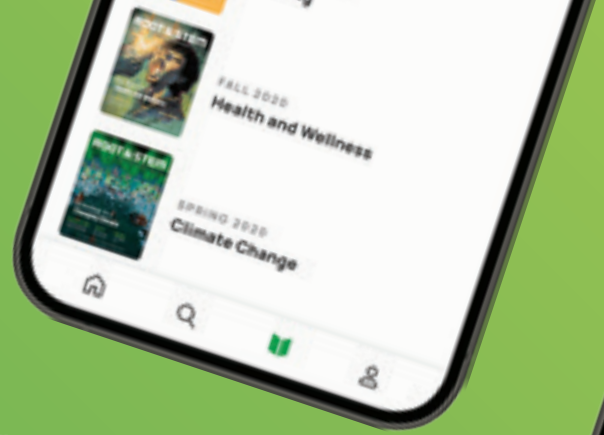
DIBAAJIMOWINAN

GIKINAMAWINDAWAANAN

GIKINOO'AMAAGEWIGAMIG STEAM
IZHICHIGEWINAN

Kinowaaptoon iw digital version etemgak
omaa *Root & STEM* app for iOS ge
Android, washme ji wepanak aabjitoong
ge wepanak dowaabdamon iw STEAM
aabjichiganan!

f t i @amperecanada



Mikigaade bebakaan inwewinan imaa STEAM Gikendaasowin



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pinnguaq.com/learn/the-root-stem-podcast

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