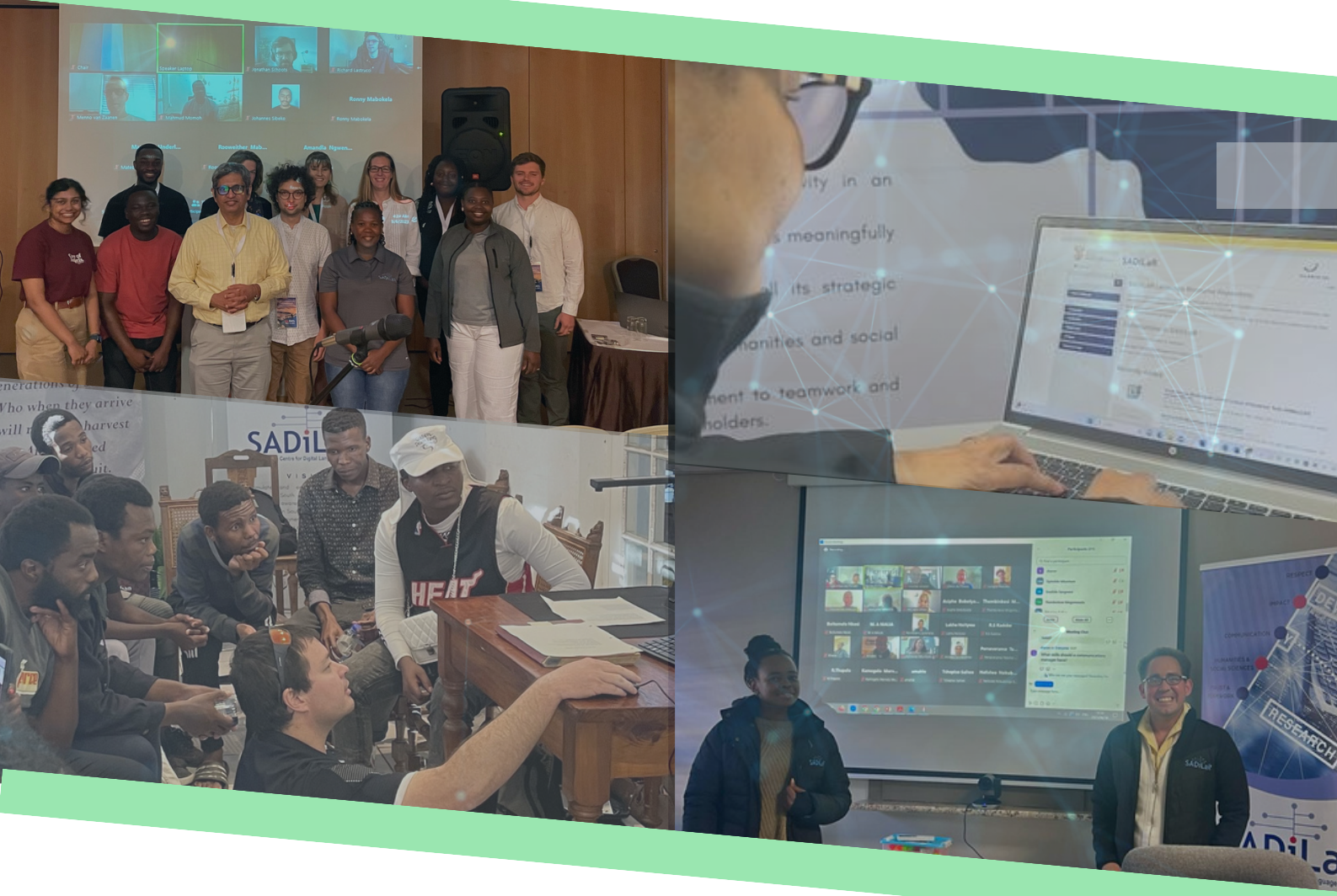




# INCWADI YEZINDABA YESIZULU

UMANDULO 2023



IXHASWE NGU:



science & innovation

Department:  
Science and Innovation  
REPUBLIC OF SOUTH AFRICA

IBANJELWE:



ABAHLANGANYELI:





## FUNDA MAYELANA:

1 Ukuxhumana kwemuva nesimanje: umhlangano wokugcinwa kolwazi kumakhompyutha eMazisi Kunene Museum

3 Inqolobane yeNsizakusebenza yoLimi yaseSADiLaR isiza uCwangingo loLimi

5 Uhlelokuqeqesha lweSADiLaR neUJ luveza amathuba emisebenzi kuhlelokugcina ulwazi lwezoluntu kumakhompyutha

7 Ucwangingo oluxhaswe yi-SADiLaR lunikeza izwi ebantwaneni besiPedi emphakathini wabakhubazeke kakhulu

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## Xhumana nathi:



# UKUXHUMANA KWEMUVA NESIMANJE: UMHLANGANO WOKUGCINWA KOLWAZI KUMAKHOMPYUTHA EMAZISI KUNENE MUSEUM

- Rooweither Mabuya

Kulesisikhathi samanje sokuphucuzeka okukhulu kwezokugcinwa kolwazi kwezamakhompyutha, ukugcineka nokutholakala kwamagugu ezomlando kanye nemibhalo kubalulekile. ISouth African Centre for Digital Language Resources (SADiLaR) isanda kuhlela umhlangano wezokugcinwa kolwazi kumakhompyutha eMazisi Kunene Museum eThekwini. Lo mhlangano okade uphethwe abacwangingi bezokugcinwa kolwazi labantu kumakhompyutha uRooweither Mabuya no-Andiswa Bukula kanye nomqondisi wezokusebenza waseSADiLaR uJuan Steyn, inhloso yalomhlangano bekuwukufundisa abasebenzi kanye nabaxhasi ohlelweni lokugcinwa kolwazi kumakhompyutha okuyimibhalo eyigugu yabo. ISigcinamagugu iMazisi Kunene iyisikhungo sezamasiko esizinikele ekukhumbuleni impilo nomsebenzi wembongi eyaziwayo nengcithabuchopho uMazisi Kunene. Yikhaya lemibhalo eminingi eyahlukene futhi ebalulekile kanye namagugu ekunikeza okuncane kokukhulu kwezamasiko aseNingizimu Afrika.

7 Ukugcinda ukuphuthuma kokugcinwa kwalomcebo wezomlando ugcinelwa isizukulwane esizayo, abaphathi bomhlangano, uMabuya, uBukula kanye noSteyn, bathule uhlelo lwezokugcinwa kolwazi kumakhompyutha. Bakhombise ukuthi ubuchwepheshe besimanje kungaletha impilo entsha kulemibhalo emidala ukuyenza itholakale emhlabeni wonke.

16 Ukugcinwa kolwazi kumakhompyutha kugqugquzela ukusebenzisana kanye nokunikezelana ngolwazi ngokuhlela ukushintshana ngezinto ezigcinwe kumakhompyutha nezinye izigcinamagugu kanye nezinye izikhungo. Kuphinde kwengeze ukutholakala kubacwangingi, ongoti kanye nabanentshisekelo emhlabeni wonke ukuthi bafunde futhi bancome lomsebenzi wezomlando kumakhompyutha.

## Ukugcinwa kwezamasiko ngobuchwepheshe besimanje

Okunye okubalulekayo okubalulekile kwalomhlangano kwakuwukunikezelwa komshini wokuskena, I-IRIScan Desk 5 Pro, kanye nekhompyutha. Ukusebenza kwesikena okuphucuke kakhulu, njengokukwazi ukuzipheqela amakhasi, ukukhulisa isithombe, kuzoqinisekisa ukugcineka kwesithunzi semibhalo ngqo ngesikhathi sithatha yonke imininingwane ngokucophelela.

Ukuzinikela kweSigcinamagugu iMazisi Kunene ekugcinweni kolwazi ngezamakhompyutha kusho ikusasa elihle ekugcinweni kanye nokutholakala kwezamasiko. Ababambiqhaza kulomhlangano bagqugquzeleka ukuqhubeka nemizamo yokugcinwa kolwazi kumakhompyutha ngemva komcimbi, ukuqinisekisa ukugcineka kanye nokubekwa ngokuphelele kolwazi kumakhompyutha.





Isigcinamagugu sihlela ukubambisana nokusebenzisana nabanye ukwengeza ukubonakala kokugcinwa kolwazi kumakhompyutha kanye nokubheka izindlela ezintsha zokuxhumana nomphakathi ngolwazi oluqoqelwe kumakhompyutha. Umhlangano wokugcinwa kolwazi kumakhompyutha obuseMazisi Kunene Museum kube umsebenzi omkhulu ekugcinweni nokuqhakambiswa kwezamasiko ngobuchwepheshe besimanje.

Ngokusizwa ongoti kanye nokunikezwa imishini ephambili kakhulu, abasebenzi basesigcinamagugu kanye nababambisene nabo bafundiseke kahle ukuqala lolu hambo lokuguqukela ekugcinweni kolwazi kumakhompyutha.



Xhumana nathi:





# INQOLOBANE YENSIZAKUSEBENZA YOLIMI YASESADILAR ISIZA UCWANINGO LOLIMI

- Birgit Ottermann

Uhlelokukhetha, ukhulukanisa nokugcina imibhalo kumakhompyutha ephinde isebenziseke nensizakusebenza yenkulumo yezilimi ezisemthethweni zaseNingizimu Afrika kuyindaba ebalulekile ekucwaningeni nokuthuthukisa emkhakheni wezobuchwepheshe bolimi. Idatha ibalulekile kodwa hhayi ukuthuthukisa amathuluzi okusebenza kokuxhumana phakathi kwamaqoqo ahlukene olimi kodwa ukuphinde isize izilimi zendawo ukuthi zisebenzise uhlelo lokuxhumana lwesimanje. ISouth African Centre for Digital Language Resource (SADiLaR) isithathe indima ebaluleke kakhulu nge Nqolobane yeNsizakusebenza yoLimi. Namhlanje inezinto ezibalelwa ekhulwini ezilimini eziningi okutholakalayo nasemphakathini okuyithuluzi lokutholakala okuvulelekile.

Inqolobane yensizakusebenza yolimi yaseSADiLaR isinamatemu abhaliwe angaphezu kuka-400 ngezilimi eziningi ngisho nezilimi ezimbalwa zangaphandle kwaseNingizimu Afrika, kusho uDkt Friedel Wolff oyimenenja yezobuchwepheshe eSADiLaR. "Amanye amatemu azichaza wona ukuthi insizakusebenza ibuliminingi, isibonelo isoftware eyeseka izilimi ezahlukene. Akuyona yonke insizakusebenza olimini lakho engakuchaza noma ikujabulise, kodwa kungenzeka ukuthi yilokhu okufunwa umcwaningi noma unjiniyela wama-software uma efuna into ezonijabulisa ngolimi lwenu.

## Ukunikeza insizakusebenza isikhathi eside

Izinhlobo ezahlukene ezikhona zezinsizakusebenza kusuka kumbhalo wezogesi nedatha yenkulumo (njengeqoqo lwemibhalo ekhethekile, uhlumagama, izichazamazwi, ukuhumusha kanye nekhophora ebuliminingi) kuya kunsizakusebenza ye-multimodal kanye namathuluzi, ukwenzeka nezindawo ezeseke ukwenziwa kwedatha nokuthuthukiswa kwezobuchwepheshe ezintsha.

NgokukaWolff idatha yocwaningo egcinwe kunqolobane yeSADiLaR yinkulu kakhulu kubacwaningi.

"Idatha yocwaningo eningi kunqolobane yayibiza futhi ithatha iskhathi ukuyenza. Enye yayidinga ongoti noma namandla amakhompyutha lapho babembalwa ababekwazi ukungena khona" ephawula. "Inqolobane yenza lokhu kubaluleke kuwona wonke umuntu onentshisekelo, futhi umbono ngenqolobane enjena ukuthi inqolobane ikwazi ukwenza noma yiluphi uhlobo locwaningo, abacwaningi abanentshisekelo ngamanye amazwi ukunikeza lensizakusebenza isikhathi eside. Ukunikeza isikhathi eside kungaba nzima futhi kukhathaze kubasunguli abaningi, akulula ukuhlezi bezivikela emsebenzini wabo. Lokhu kunikeza isizinda sokutholakala, ngaphandle kokuthatha izincomo kubantu abanze lomsebenzi bezisungula", echaza.

## Isizinda sokungena

UDkt Benito Trollip, umcwaningi wezokugcinwa kolwazi kumakhompyutha eSADiLaR, umsebenzisi onomdlandla onesandla kulenqolobane, uvumelana nokuphawula okungenhla. "Inqolobane yensizakusebenza yolimi yaseSADiLaR inikeza umgomo we-platform yesikhathi eside kudatha yososayensi bezilimi ukuthi ibe khona

## Xhumana nathi:





emphakathini wonkana lokho akufaki abacwaningi kuphela. Umuntu onogqozi ofuna ukwazi ngezilimi ezaziwa kancane baphinde baqala ezobuchwepheshe ezinosizo, kusho uTrollip.

Uma kuza kunqolobane ukuthi ibe isizinda sokungena, uTrollip ugcizelela ukuthi kunzima kanjani ukusebenzisa idatha yesayensi yezilimi esivele ikhona njengomthombo, noma ulwazi ngayo, ibucayi futhi ayitholakali.

“Kujwayele ukuthatha isikhathi eside nomsebenzi omkhulu kakhulu ukwenza idatha eyiyona. Ngokuzithoba ngombono wami, kumele siwuyeke lomqondo wokuthi senze izinto kube ngezethu, ukuthuthukisa nokusebenzisa idatha ukuthi usizakale wena kuphela, ngokwezemfundo nokuzuza ngokwezimali, kuye emqondweni wokwabelana ngedatha ukuze ukwazi ukusiza umphakathi wonkana, esho njalo.

### Ithuluzi elibalulekile

UDkt Laurette Marais oyimennenja yaseSADiLaR yenodi yenkulumo eCouncil for Scientific and Industrial Research (CSIR) kanye nethimba lakhe sebebone okuhle ngenqolobane yaseSADiLaR njengabanesandla kanye nabayisebenzisayo. Babelane ngezinsizakusebenza zabo ezibalulekile, okwenze kwathuthuka imikhiqizo emayelana nokudayisa, futhi baphinde bazuza ukuthola izinsizakusebenza abangazisungulanga bona.

“Kulaba abayiqoqo lwabacwaningi baseCSIR Voice Computing Research Group, abaphinde baziwe nge-Speech Node eSADiLaR, Inqolobane Yezinsiza isiyithuluzi elibalulekile ekuhleleni nokwenza ucwaningo, njengakho kokubili kuyindawo yokwabelana ngolwazi esiluhlanganisayo silwenze,

kodwa futhi indawo yokuqala esiyisebenzisayo uma sidinga insizakusebenza yolimi kuphrojekthi yethu. Indima ebonakalayo yethu enqolobaneni kwakuyidatha yenkulumo ephezulu kakhulu ephuma kuphrojekthi yethu uLwazi, eseyisebenzisile ukwenza ezokudayisa zamazwi eTTS ebizwa nge Qfrenzy,” kusho uMarais.

“Sikwenzile ngesikhathi esidlule futhi sisakwenza ukuba negalelo kudatha yenkulumo ehlose ukuqeqesha okuzenzekelayo kohlelo lokubonakala kwenkulumo. Ngaphezu kwalokho inqolobane isisebenza njengomthombo obalulekile uma sidinga idatha yombhalo kunoma yiluphi ulimi lwaseNingizimu Afrika. Ngiyakholwa ukuthi noma yimuphi umfundi noma umcwaningi kwezobuchwepheshe bolimi eNingizimu Afrika kumele azijwayeze nenqolobane ukuthi ingamsiza kanjani, ikakhulukazi imithombo intuleka ezilimini zethu.

### Umlando omfishane

Okumangazayo, ukuthi inqolobane yaqala ngaphambi kweSADiLaR. Yethulwa ngonyaka wezi-2012 ithulwa isikhungo sezobuchwepheshe bombhalo (Ctext) eNyuvesi yaseNorth-West njenge Resource Management Agency (RMA) uxhasomali lwaluqhamuka kuMnyango weZobuciko naMasiko esiKhungweni sazwelonke lwezobuchwepheshe bezilimi zabantu.

Ngesikhathi kuthulwa iSADiLaR ngonyaka wezi-2019 ngokusekwa yiDepartment of Science and Innovation (kulandela isigaba sokukhula nokuthuthuka kusekela ngonyaka wezi-2016), iRMA yahlanganiswa kuNqolobane yensizakusebenza yolimi kwaseSADiLaR, iSADiLaR yabe isithatha ngokuphelele umsebenzi wohlelokuhetha nokuyinakekela inqolobane.

### Xhumana nathi:

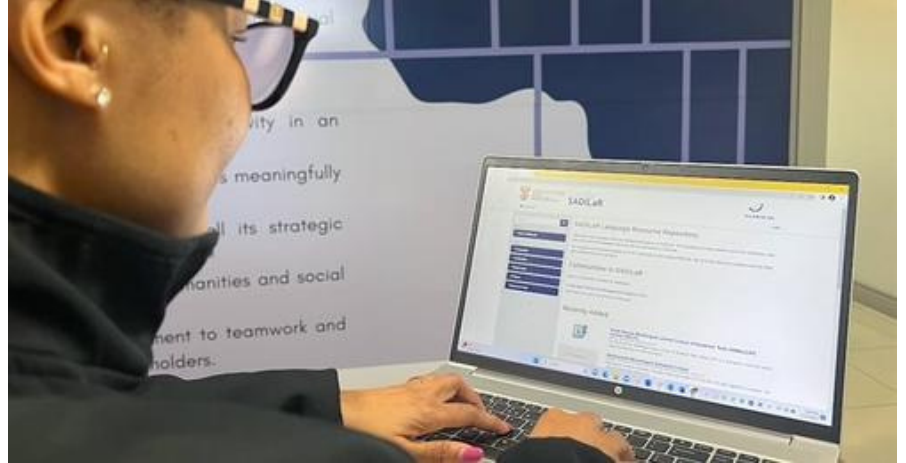






## Thumela insizakusebenza

Uma usungule insizakusebenza yolimi futhi ufisa ukuthi isebenze nokuthi itholwe ngabanye, inqolobane yaseSADiLaR iyindawo enhle kakhulu. Kuyindawo evikelekile enezincwadi zokusebenza ezisemthethweni kuwona wonke umuntu ocwaningayo emkhakheni wolimi, ezoluntu kanye nesayensi yezoluntu. Ulwazi oluphelele ukuthi ungayithumela kanjani insizakusebenza, sicela uvakashela ikhasi le-[SADiLaR Resource Guidelines](#) SADiLaR Resource Guidelines.



## UHLELOKUQEQESHA LWESADILAR NEUJ LUVEZA AMATHUBA EMISEBENZI KUHLELOKUGCINA ULWAZI LWEZOLUNTU KUMAKHOMPYUTHA

- **Birgit Ottermann**

Iqoqo lososayensi bezilimi nabafundi abafunda ngezilimi abasuka eNyuvesi yaseGoli basanda kuthamela umhlangano ngamakhompyutha kanye nabasebenzi baseSouth African Centre for Digital Language Resources (SADiLaR) ukuze bafunde okuthe xaxa ngamathuba angavela emkhakheni wezokugcina ulwazi kumakhompyutha. Lolu hlelokuqeqesha losuku olulodwa olwenzeka mhlaka 14 kuNhlangulana kunyaka wezi-2023 belwenza ngo-Zoom, lunikeze abafundi izindlela ezahlukene ngezinhlobo zemisebenzi abangayithanda uma sebeqede ukufunda.

“Inhlosongangi yethu bekuwukunika abafundi uhlelokuqeqeshwa lwesikhashana ngokufunda ngohlelokuqeqesha ulwazi lwezoluntu kumakhompyutha” kusho uDkt Benito Trollip, ongumcwaningi wezokugcina ulwazi lwezoluntu kumakhompyutha ngesiBhunu eSADiLaR, futhi ungumhleli oqavile kuloluhlelokuqeqesha. “Sikwenze lokhu ngokwethula

abafundi kuSADiLaR nocwaningo olwahlukene lwamanodi, ukusebenzisa amanye amathuluzi abangawasebenzisa ukuhlaziya, ukuhlela, uhumushe noma ukuxhumana nolimi kodwa kwezamakhompyutha, sinabasebenzi abasichazelayo ngomsebenzi abawenzayo eSADiLaR.”

### Xhumana nathi:





Inhloso yaloluhlelokuqeqesha yaqhamuka ngesikhathi uLaurida van Tonder, umfundisi we -Applied Linguistics, eMnyangweni weziLimi, izifundo zaMasiko, neSayensi yezilimi e-UJ exhumana noTrollip efuna ukuthola ukuthi uhlelokuqeqeshwa kubafundi abenza unyaka wokugcina kwiSayensi yezilimi nezifundo zolimi kungenzeka yini eSADiLaR.

“ULaurinda ungichazelile ukuthi abafundi bajwayele ukuba nohlelokusebenza losuku olulodwa ezikhungweni ezifana namabhange, omasipala basekhaya (lapho abasebenza ngolimi bephinde besebenze, kodwa uphinde wacabanga ukuthi ukwethula abafundi kuSADiLaR kuzokwengeza indlela ababona ngayo imisebenzi ekhona kuwona umkhakha wezilimi”, kukhumbula uTrollip. “Uphinde wangichazela nokuthi yini uhlelokuqeqesha- okuwuhlelokusebenza ngamakhompyutha”, engeza.

### Kunolwazi futhi kwenza uhluze umqondo

NgokukaTrollip, uhlelokuqeqesha lokuqala lweSADiLaR lube yimpumelelo enkulu. “ Sithole umbiko omuhle kakhulu kubona bonke ababambe iqhaza kanye nakumalungu eSADiLaR akade benyingxenywe yalokhu. Abafundi bebhuluma kakhulu futhi ngibona engathi ukuxhumana kwabo neqembu laseSADiLaR bekuzenzakalela, kunolwazi futhi kuhluza umqondo.

NgokukaRooweither Mabuya ongumcwaningi wehlelokugcina ulwazi lwezoluntu kumakhompyutha ngesiZulu eSADiLaR, obe yingxenywe yeseshini yantambama yehlelokuqeqesha, abafundi bebhulangazelela kakhulu ukufunda okwengeziwe ngocwano olwenzeka eSADiLaR. “Ngabelane nabo ngentshisekelo yami kwezocwano ngaphinde ngabachazela nokuthi ngazi kanjani ngohlelo lokugcina ulwazi kumakhompyutha ngesikhathi ngifika eSADiLaR. Ngiphinde ngakuveza nokuthi ukwethamela imihlangano eyahlukene kanye namathuba okuqeqeshwa kungisize kanjani

ukuthi ngingalisebenzisa kanjani uhlelokugcina ulwazi kumakhompyutha ocwano ngweni lwami”, uMabuya ofundela iziqu zobudokotela uthokozile ngesikhathi umfundi emcela ukuthi abelane naye ngamathuluzi awasebenzisayo ocwano ngweni lwakhe.

Omunye umcwaningi wezokugcina ulwazi lwezoluntu kumakhompyutha waseSADiLaR uMmasibidi Setaka ogxile esiSuthwini uthokozile ukuthi bebexhumana kahle kanjani nabo. “Babuze imibuzo eminingi exhumene nokuthi senzani eSADiLaR. Njengoba uhlelokugcina ulwazi lwezoluntu kumakhompyutha kusawumkhakha omusha eNingizimu Afrika, banentshisekelo ukufunda ngomsebenzi esiwenzayo ngokugcina ulwazi kumakhompyutha nokwakha izinsizakusebenza zolimi zezilimi ezishumi nanye ezisemthethweni. Ngiphinde ngabatshela nokuthi siyenza kanjani imihlangano eyahlukene yokwabelana ngolwazi esesilutholile kwabanye. Ngokokuphumelela kwaloluhlelokuqeqeshwa ngingafisa ukuthi silwenze nakwezinye izikhungo.”

“Sichithe isikhathi eningi kakhulu ekhasinilwazi nokukhombisa abafundi ukuthi uluthola kanjani ulwazi, izinsizakusebenza namathuluzi abangawadinga. Ukufundisa kwethu ngamathuluzi ahlukene sikhombisa abafundi ukuthi yini ekhona nokuthi ingabasiza kanjani emsebenzini wabo kanye nasezifundweni zabo kwezesayensi yezilimi kulemikhakha ababhizi kuyona noma abahlela ukuyifunda”, echaza. “Amathuluzi amabili aqede umdlandla wabafundi bekuyi-Autshumato wokuhumusha (ukuhumusha umusho kusuka esiNgisini kuya esiZulwini) nokubheka amagama kuphuthali yeKhophasi”

Umbiko wabafundi ongezansi

### Xhumana nathi:





uzikhulumela wona, nokuthi uhlelokuqeqesha olunye luyalandela kungekudala:

Siyabonga kakhulu. Sifunde lukhulu, qhubekani nisingathe ezinye izinhlelo ezinjena. Nabanye bangakujabulela kakhulu.

Siyabonga kunina nonke, Lokhu kubeyimpumelelo, kujabulisa, yinto ebesiyidinga kakhulu njengabafundi”

Ngifuna nje ukuthi siyabonga eqenjini laseSADiLaR ngolwazi esiluthole namhlanje. Sifunde lukhulu namhlanje, siyagqugquzeleka ukuqhubeka kulomkhakha mhlambe ngelinye ilanga siyonijoyina nonke. Wonke umuntu ube nomoya omuhle.”



## UCWANINGO OLUXHASWE YISADILAR LUNIKEZA IZWI EBANTWANENI BESIPEDI EMPHAKATHINI WABAKHUBAZEKE KAKHULU

- Birgit Ottermann

Ukuqalwa kwalezizindlela ezinye zokuxhumana kubantwana abangafundi ikakhulukazi labo abanenkanga enkulu yokuxhumana nabantu futhi abadinga uhlelo lwezithombe ukuze bakwazi ukukhuluma bekuvele kuwucwaningo olubaluleke kakhulu kuSlz. Kerstin Tönsing.

Abantwana abadinga lolo hlelo isikhathi esingi abanye babo bakhubazeke emzimbeni okwenza bangakwazi ukusebenzisa ulimi lwezimpawu, kusho uTönsing, ongungoti wenkulumo, ungoti wezokuzwa ophinde abe nguSolwazi eNyuvesi yasePitoli esikhungweni se-Augmentive and Alternative Communication.

“Sibahlinzeka ngohlelokuqeqesha lwezithombe olumele amagama abangazikhomba noma bacofe emshinini ukuze badlulise myalezo wabo” echaza.

Yize noma loluhlobo lokungenelela selusebenze kakhulu emkhakheni we-Augmentive

### Xhumana nathi:







and Alternative Communication (AAC) ukusiza labo abangeke bakwazi ukuxhumana nabantu ngokukhuluma okujwayelekile maningi amagama ohlelokufunda lwezithombe asekhona ezilimini ezahlukene - iningi lezilimi ezaziwayo zinezinsizakusebenza ezincane ezisalele emuva. Lokhu kuyiqiniso ezilimini eziningi zaseNingizimu Afrika okubandakanya isiPedi.

“Ngiqale ukukhathazeka kakhulu ngesikhathi ngibona ukuthi singenelela kakhulu ezinganeni zaseNingizimu Afrika ngesiNgisi ulimi olwasekhaya okungesona isiNgisi”; kusho uTönsing. “Siphila ezweni elisebenzisa ubuliminingi futhi izingane kumele zikwazi ukuzikhulumela ngolimi lwasekhaya. Lokhu kubandakanya nalezozingane ezindinga uhlelokufunda lwezithombe. Kodwa, yini esiyenzayo ukukhuthaza zonke izilimi zezingane?”

Siyabonga ocwaningweni oluxhaswe yiSouth African Centre for digital Language Resources (SADiLaR), lokhu kuzoshintsha izimpilo zabantwana besiPedi. UTönsing kanye nethimba lakhe sebeqale iphrojekthi yokwenza ucwaningo ukwazisa abaxhasi ngohlelo olungasebenzisi amakhompyutha lwesiPedi. Inhloso ukwenza uhlelo oluvulelekile olunamagama ahlukeno oluvumela ukuthuthuka kolimi.

### Ukuxhumana ngolimi lwebele

“Ukuxhumana kubantwana abangakafundi isendlalelo sabo solimi leSpedi (Sesotho sa Leboa) sivimbezelekile njengoba lungexho uhlelo lweAAC olukhona ngolimi lwebele-kulinganiselwa ezinganeni ezingu-80000 zamaPedi ezithintekayo. Uhlelokufunda ngezithombe lweAAC luvumela ukukhukhuluma ngesiPedi njengoba kuyisidingo esiphuthumayo”; kuphawula uTönsing.

Uqokiwe ukuhola lolu cwanningo njengoba luxhumene kakhulu nocwaningo lwakhe lweziqu zobudokotela nasemva kobudokotela olugxile ekuthuthukiseni izinhlalokufunda zaseAAC olunikeza ukutholakala kwezinye izilimi ngaphande kwesiNgisi eNingizimu Afrika. “Le phrojekthi yengeza ocwaningweni lweziqu zeMasters zikaNgwanamashiane Rahab Mothapo, osewumfundi weziqu zobudokotela futhi ukubambisana naye kubalulekile”; kuqhubeka uTönsing. Sithole uhlumagama ngqo kusuka ekuhlaziyweni kwamasampula olimi lwezingane zasenkulisa zesiPedi. Sibe sesihlonza izimpawu zemidwebo kulezimpawu ebezikhona emtapweni wolwazi, ezaqinisekiswa futhi zengezwa nabaxhasi emva kwezingxoxo. Ezinye izimpawu ezengeziwe zisakhiwa ukumela amanye amagama esiPedi esingakwazanga ukuthola izimpawu ezifanele”

### Uhlelokwakha olugxile kumuntu

Ngokuka Tönsing, baphinde bahlaziya futhi baxoxa ngezidingo ezidingekayo zokwakha neqoqo labaxhasi, okubandakanya ongoti benkulumo abanolwazi kuAAC nokusebenza ngolimi lwesiPedi, abazali babantwana abanezinkinga eziningi zokuxhumana abazidinga kwisisekelo sesiPedi, abantu abadala abasebenzisa i-AAC nothisha abafundisa abantwana isiPedi abanokukhubazeka kwezokuxhumana. Ababambiqhaza kumele bagxile kakhulu esifundazweni saseLimpopo lapho sikhulunywa khona.

Konke ukuxhumana kwamaqoqo aqokiwe kuyahunyuswa futhi kuyahlaziywa. Isinyathelo esilandelayo ukuqala uhlelokwakha olugxile kumuntu lapho isibonelo sokuqala sohlelo lweAAC sizohlolwa.” Sesizoqeda ukwakha isibonelo sokuqala,

### Xhumana nathi:





okusithokozisayo kakhulu. Kuwuhlelo esilwenza nabaxhasi lapho silalela izimvo zabo nokuphinde sakhe size sifike esigabeni lapho uhlelokufunda lulungele ukusebenza. Nalapho izimvo zabantu abazobe belusebenzisa sisazozithatha, kusho uTönsing.

### Inkomfa yaphesheya

Imiphumela yesigaba sokuqala sephrojekthi izokwethulwa nguRahab Mothapo kwiNkomfa yeminyaka emibili ye International Society for Augmentative and Alternative Communication eCancun eMexico kusuka mhlaka 24 kuya ku 27 kuNtulikazi ngonyaka wezi-2023. Inkomfa engqikithi ithi ukuxhumana ngale kwemingcele; izothanyelwa ngabacwaningi, izifundiswa, nabasebenzi nabantu abasebenzisa i-AAC emhlabeni wonkana futhi bazokhombisa ucwaningo lwakamuva nje nolwazi asebelutholile emkhakheni weAAC.

Kuyinhlamba esiyilethelwe yiSADiLaR ukwethula imiphumela yalolucwaningo olubaluleke kangaka olungena emikhakheni eminingi kuphawula uMothapo. Sengijahile ukwabelana ngolwazi kulezithameli ezahlukene. Lokhu kumina kuveza umzamo omncane ekwenzeni ukuxhumana kutholakale ebantwini baseNingizimu Afrika abakhuluma isiPedi abaphila nokukhubazeka kwezokuxhumana.



### Xhumana nathi:





# ISADILAR IBUNGAZA UMHLANGANO OYIMPUMELELO WERAIL WESINE ECROATIA

- **Birgit Ottermann**

ISouth African Centre for Digital Language Resources (SADiLaR) isingathe umhlangano wesine weZinsizakusebenza zezilimi zomdabu zaseAfrika (Resources for African Indigenous Languages) eDubrovnik, eCroatia. Lo mhlango waminyaka yonke owenzeka ngomhlaka 6 kuNhlaba ngonyaka wezi 2023 njengengxenywe yeNkomfa yesi-17 yeEuropean Chapter of the Association for Computational Linguistics (EACL 2023), yayihlelwe abaseSADiLaR uRooweither Mabuya, uMmasibidi Setaka, uSlz. Menno van Zaanen kanye noDon Mthobela weCAM Foundation.

Umhlangano weRAIL ube yimpumelelo enkulu. Bonke abethameli balomhlangano bebesebenzisana umhlangano waze waphela, obekuwumhlangano wosuku lonke, kusho uMabuya, obebuye abe wusihlalo ngokubambisana noSetaka. "Umhlangano onika imikhakha eyahlukene ukuthi abacwaningi basebenze ezilimini zomdabu zaseAfrika, ikakhulukazi lezozilimi ezinezinsizakusebenza ezincane, echaza. Kuhlanganisa ndawonye abacwaningi abanentshisekelo yokubukisa ngocwango lwabo, kunikeza inkomba yokubakhona kwezinsizakusebenza zezilimi zomdabu zase-Afrika, okubandakanya ukuqoqwa kolwazi kanye namathuluzi futhi ivumela ukwabelana ngolwazi kanye nokuxoxwa ukuthi lingaluswa kanjani izinga kanye nokutholakala kwezinsizakusebenza."

Izilimi zomdabu eziningi zaseAfrika azinazo noma zincane izinsizakusebenza futhi zijwayele ukwehluka kulezi ezinezinsizakusebenza ezingcono ngakho-ke zidinga ukuthuthukiswa nokusetshenziswa kwamaqhinga akhethekile.

## Ukukhula komphakathi wezesayensi

Ukuhlanganisa abacwaningi bemikhakha ehlukeni njengososayensi bezilimi kumakhompyutha, ososayensi bezilimi yenhlalo yabantu nezobuchwepheshe bolimi ukuxoxa ngokuthuthuka kwezinsizakusebenza zolimi ezilimini zomdabu zaseAfrika. "Sifisa ukunyusa izinga kulemikhakha"; kusho uSetaka. "Ekugcineni sihlose ukwakha imibandela yokuhlangana komphakathi wezesayensi ozogxila kulwazi kanye namathuluzi ikakhulukazi eyakhelwe ukusebenza kwezilimi zomdabu okutholakala e-Afrika."

Bobabili uMabuya noSetaka abangabacwaningi bolwazi lwamakhompyutha kwezoluntu eSADiLaR kwisiZulu nesiSuthu babeyingxenywe yomhlangano weRAIL kusekela ngonyaka wezi-2019. Imihlangano emibili yokuqala ngokuxhumana ngamakhompyutha ebise Language Resources and Evaluation Conference (LREC) ngonyaka wezi-2020 nenkomfa yeDigital Humanities Association of Southern Africa

## Xhumana nathi:







(DHASA) ngonyaka wezi-2021. Emva kweCovid 19 umhlangano wesithathu weRAIL owawusingethwe ngokuthi kufike abantu emhlanganweni I-Southern African Microlinguistics ePotchefstroom ngonyaka wezi-2022.

Umhlangano wakulonyaka obungomunye owamukeliwe kweziyi-13 enkomfeni ye-EACL, waba namaphepha ayi-14 nomphumela owodwa ngesikhathi kwethulwa amaphepha, kuphawula uMabuya. Izinkulumo zethulwe ngendlela ye-hybrid format njengoba abanye ababambiqhaza bengakwazanga ukuphumelela - amaphepha ayisikhombisa athulwa ababekhona kwase kuthi ayisishagalombili athulwa ngokuxhumana ngamakhompyutha.”

Imibono ibe mihle kakhulu UMabuya noSetaka babenenhlanhla yokuhambela ezweni laseCroatia ukuyothamela inkomfa ye-EACL ngonyaka wezi-2023, siyabonga kwabaxhase ngemali yokuhamba abayitholile ukuze bakwazi ukuyokwethula amaphepha abo kwinkomfa. “UMmasibidi Setaka uthole iDiversity and Inclusion Subsidy ehlose ukweseka abacwaningi abaqhamuka ezindaweni ezigcindezelekile, mina ngathola uxhasomali ohlelweni lwamavolontiya oluhlose ukweseka abacwaningi abazimisele kwezemfundo ukuze ngizothamela inkomfa ngiphinde ngisize emsebenzini yenkomfa”, kusho uMabuya.

Bobabili abacwaningi bathule amaphepha abo bemele nakade bebhala nabo amaphepha emhlanganweni weRAIL. Iphepha likaMabuya belithi: [Unsupervised Cross-lingual word embedding Representation for English-isiZulu](#).

UMabuya ulibhale kanye Derwin T Ngomane, Vukosi Marivate, uJade Abbott.

Iphepha lethu balamukele kahle kakhulu, ngokuphawula kanye nemibuzo evela kwabakade bethamele, kukhumbula uMabuya. “Omunye wabakade bethamele uze wacela ukuhlangana nababhali bephepha ngoba ubedinga usizo ngocwaningo lwakhe olufana nolwethu”

USeteka naye ujabulile ngokwamukeleka akutholile ngokwethula iphepha lakhe elithi: [Evaluating the Sesotho rule-based syllabification system on Sepedi and Setswana words](#). Ubelibhala noJohannes Sibeko. Abantu bebenomdlandla bajabula nokwazi ukuthi kukhona umhlangano obhekene neNLP ukuhlelwa kolimi ngokwemvelo e-Afrika”.

### Ukuxhumana nabantu abasha

Uma sibheka inkomfa nokuphumelela kwayo nje yonke kusho uSetaka “Inkomfa ihlanganise ndawonye abantu abahlekene abanentshisekelo emikhakheni eminingi yeNLP. Umhlangano ube yimpumelelo enkulu kakhulu lapho abantu kade bebambe iqhaza kahle kakhulu. Ukuthi nje umhlangano wethu wamukelwe yi-EACL kube yinto enhle kakhulu kumina uma ubheka ubunjalo be-EACL nokuthi ikuliphi izinga emphakathini weNLP”.

UMabuya uthi uxhumane nabantu abaningi, “bekuyinkomfa enkulu enezinkulumo eziningi kanye nezethulo ngaze ngathola nokuhlangana nabacwaningi abayisimanga. Uma sibheka umhlangano wethu, ube yimpumelelo kangangoba besinababhali abekade belokhu bethumela ucwaningo lwabo ku-RAIL kusukela ngonyaka iqalile. Lokhu kukhombisa ubunjalo bomhlangano wethu nomsebenzi oshicilelwe ekusebenzeni kwethu. Siphinde sibe nekomidi elihlelayo eliphinde lise ngokubhekisisa okusuke kuthunyelwe.”

### Xhumana nathi:





I-Proceedings of the Fourth workshop on Resources for African Indigenous Languages (RAIL) isiyatholakala manje kanti nethimba le-SADiLaR selijahile ukwamukela ingxenye yesihlanu ye-RAIL, uma isimemezelo samaphepha sesiphumile. Inhloso ukuthi umhlangano ube mkhulu kakhulu nokuthi kuvumele abacwaningi ukuthi basize ekuhleleni ukuthi iye phambili, kuphetha uSetaka.



Xhumana nathi:





# IPHEPHA LOCWANINGO LWEZIQU ZOBUDOKOTELA LIBEKE ISADILAR EZINGENI LOMHLABA

- Birgit Ottermann

ISouth African Centre for Digital Language Resources (SADiLaR) ijabulela ukuqhosha ngamalungelo asezingeni lomhlaba, sibonga iphepha locwaningo lweziqumbe zobudokotela elafakwa ekushicilelweni kwePost Conference Proceedings yangonyaka wezi-2022 kwimkomfa yonyaka yakaCLARIN.

UJohannes Sibeko ongumfundi wezobudokotela olulekwa nguSlz. Menno van Zaanen waseSADiLaR ungomunye wabacwaningi bezobudokotela abayishuminambili abaqokiwe ukwethula iziqeshana zocwaningo lwabo kwiSeshini yaBafundi beZobudokotela kwimkomfa yeshuminanye yonyaka yakaCLARIN, eyenzeke ngomhlaka 10 kuya mhlaka 12 kuMfumfu ngonyaka wezi-2022 ePrague eCzech Republic. Kwaba yimpumelelo ngoba wamenywa ukuthi athumele iphepha lakhe eliphelele ukuze lifakwe ePost Conference Proceedings, eyikushicilelwa okuvulelekile eyethula amaphuzu avelele ayo yonke inkomfa.

ICLARIN isifinyezo seCommon Language Resources and Technology Infrastructure, yingqalasizinda yezamakhompyutha enikeza ngedatha, amathuluzi kanye nezinto ezeseke ucwaningo egxile kuzinsizakusebenza zolimi. Iphepha likaSibeko lwethule ucwaningo lwakhe lwezobudokotela olubheka ukuthuthuka kwezinsizakusebenza ngokukala imibhalo efundekayo ngesiSuthu, ulimi lwesiBantu olukhulunywa abantu abangaphezu kwezigidi eziyishumi eNingizimu Afrika yonkana.

## Uyena yedwa umfundi ozokwethula iphepha waseAfrika.

Incwadi yokwamukelwa isho lukhulu kumina, kusho uSibeko, ongumfundisi wezokugcina ulwazi lwezoluntu kumakhompyutha eNyuvesi yaseNelson Mandela

eGqeberha. “Bengithukile kwimkomfa ngesikhathi ngethula iphepha lami, kodwa futhi ngijabule ukuthola ithuba lokuba esiteji saphesheya. Ukukhethwa ukuthi ngimele iSADiLaR, nokuthi kuphinde kube yimi kuphela umfundi omele i-Afrika kube yinjabulo enkulu kumina. Ngibe nokuziqhenya”.

Ngebhadi uSibeko akawazanga ukuthamela inkomfa ngenxa yeviza. Ngigcine sengithamela ngamakhompyutha kuphela. Ngiphoxeke kakhulu ngoba angikwazanga ukubamba iqhaza ezintweni ezihlelwe yi-CLARIN ngaphinde ngaphuthwa amathuba okuxhumana nabantu. Kodwa ke ngyathemba ukuthi asazoba khona amathuba okuhamba esikhathini esizayo”

Uma sibheka kwakuzuzile njengomuntu oseqala ukucwaninga, uSibeko uthi kumele aqale ukukholelwa kuyena futhi kumele abheke izimemezelo zokushicilela zaphesheya ngokukhulu ukuzethemba. “Ngizwa sengathi ngiyafika lapho kade ngangifisa ukuba khona ohambweni lwami lokucwaninga”

## Ukukhuluma nabafundi abangakwazi ukufunda

Ebuzwa ngesihloko sakhe socwaningo lweziqumbe zobudokotela, uSibeko uchazile ukuthi abafundi baseNingizimu Afrika bashodelwa amakhono okufunda.

“Kwezemfundo, othisha balindeleke ukuthi bakhethe futhi bajwayele imibhalo ngamazanga

## Cofoza lapha ukuze ube yilungu lenyuziletha yethu



## Xhumana nathi:







abafundi babo. Kodwa ke ukwenzeka kuyazenzekela futhi kujwayelekile. Ngakho ke ayikho indlela okuyiyona ngqo yokuqinisekisa ukuthi imibhalo ilungele ukufunda, ukufundisa nokuhlola isezingeni elifanele lokuthi ifundeke, echaza.

Indlela okuyiyona yokukala ukuthi umbhalo uyafundeka ngesiSuthu kuzosiza ekukhetheni nokujwayelwa kwemibhalo yezinhloso ezahlukene namazinga alindelekile. Ngakho ke isifundo sami sihlolise ukuthuthukisa izindlela ezifanele ukukala ukuthi imibhalo iyafundeka lokho kungasiza abacwaningi, ababhali, othisha kanye nabafundi. Inhloso ukujwayeza izindlela ezifanele eziyisishagalolunye zokufunda esezikhona ngesiSuthu kusetshenziswa isiNgisi njengolimi olunezinsizakusebenza eziningi. Zonke izifundo zizoshicilelwa kwinqolobane evulelekile yaseSADiLaR.

USibeko uyathemba ukuthi uzokwenza iweb-base application ukuze kutholakale imibhalo ehlaziyiwe efundekayo ezovumela loyo oyisebenzisayo ukuthi anamathisele imibhalo aphinde athole umbiko ohlaziyiwe ofundekayo.

NgokukaMenno van Zaanen, uSolwazi wezokugcinwa kolwazi lwezoluntu kumakhompyutha eSADiLaR naseNyuvesi yaseNorth West, ucwaningo lukaSibeko lukhombisa ukubaluleka nokusetshenziswa kwezinsizakusebenza zolimi okugcinwe kumakhompyutha kwezilimi zaseNingizimu Afrika. "Ukukwazi ukukala ukuthi iyafundeka imibhalo yesiSuthu kuvumela abafundisi ukuthi bakwazi ukukhetha imibhalo efanele yabafundi, nongoti bokubhala ukuthi bahlele kahle imibhalo yabo ngokwababhalelayo. Lona akuwona umsebenzi kaJohannes kuphela ojabulisayo ngokwezemfundo, uyakhombisa ukuthi izinsizakusebenza zingasetshenziswa ukuthuthukisa izilimi zaseNingizimu Afrika, njengesithuthu, nomphakathi, ephawula.

## Kwakunguthisha wasesikoleni samabanga aphezulu

Kuyamangaza ukuthi uSibeko wayenguthisha wasesikoleni samabanga aphezulu efundisa isiSuthu nesiNgisi ucwaningo lwakhe lwenziwa yintshisekelo yakhe yokwandisa amathuba okufunda ulimi. "Inkinga yokukhetha nokuqondanisa imibhalo efundwayo nabafundi ingaphezu kwesiSuthu. Kodwa ke isiSuthu sikhethiwe njengendlela yokuqala ukubhekana nalenkinga. Ngiyathemba ukuthi izindlela zokuthi imibhalo ifundeke zingenziwa nakwezinye izilimi zomdabu".

USibeko wahlangabezana nohlelokugcina ulwazi lwezoluntu okokuqala ngesikhathi ethola isikhundla saseNyuvesi yaseNelson Mandela futhi kwakudingeka abhekane nalomkhakha omusha. "Ngangingenalwazi ngesikhathi ngokuqala, ekhumbula." Manje sengigxile kakhulu kulomkhakha. Nginesikhathi esimnandi kakhulu ukwenza iziqu zami zobudokotela nokwenza ucwaningo sekulethe intshisekelo enkulu"



## Xhumana nathi:

