

Proceedings of the International Conference of the Digital Humanities Association of Southern Africa (DHASA) 2021

Virtual Conference

29th of November - 3rd of December 2021

This work is licensed under [CC BY-SA 4.0](https://creativecommons.org/licenses/by-sa/4.0/). To view a copy of this license, visit
The copyright remains with the authors.



With special thanks to our sponsors

Peta sponsor



Tera sponsor and best paper award sponsor



Videlectures.net and audio-visual sponsor



Facilitating access to South African place names and signed place names through a mobile app

*Loth, Chrismi-Rinda Loth**

lothc@ufs.ac.za

*Kotzé, Gideon**

kotzevj@ufs.ac.za

*De Lange, Jani**

delangejc@ufs.ac.za

**University of the Free State*

Keywords: South African Sign Language, Place names, Toponymy, Lexicography, Mobile application

Abstract

This talk reports on the development of a mobile application for South African place names. Place names are multifunctional: they are important artefacts of linguistic and cultural heritage, they are performative entities that relay identity and power relations, and they constitute a specific lexicographic subset of languages. The app will provide the etymology of a selection of place names. In addition, the app will incorporate a selection of South African Sign Language (SASL) place names, which differ from the written names. Signed place names are neglected in research in general; and in South Africa they are not even systematically documented. As such, there is a knowledge gap amongst both experts and the general public. As a digital lexicographic resource, the app constitutes an accessible platform that can facilitate specialised research as well as public access to it. We hope that this will lead to greater awareness and appreciation of place names, which could in turn contribute to their preservation as well as a critical understanding of the shaping of the shared public space.

The project responds to the increasing preference for digital rather than printed lexicographic products. This effort is aligned with the growing international trend to use digital platforms to promote and make sign languages accessible to the Deaf as well as the hearing community. We will describe the project in more detail and touch on its anticipated social impact, as well as on research fields related to the Digital Humanities.



Enhancing access to justice through a Speech-To-Text model: Language and technology in courtroom discourse.

De Vries, Annelise
Akademia
annelise@akademia.ac.za

Docrat, Zakeera
University of Western Cape
zakeera.d@gmail.com

Abstract

Previous studies (De Vries & Docrat, 2019; De Vries, 2021 and Docrat *et al*, 2021) have identified monolingual language of proceedings and record policies for South African courts as barriers to accessing justice. In this interdisciplinary presentation comprising of theory and practical examples, we aim to address the linguistic deficiencies of our legal system, by recommending a Speech-To-Text model in Human-Computer Interaction, which focuses on the mission-critical parts in courtroom discourse. We provide an overview of interviews we have conducted with experts in the field on using technology to assist in removing linguistic barriers to accessing justice. We draw on the Australian model, in which forensic linguists are using technology to aid their analysis of texts in identifying authorship by analysing text(s) with the aim of identifying linguistic fingerprints. Also aiding police investigations by recording statements in a witness/ complainant's mother tongue and producing a digital translated version for record purposes and use in court (Heydon, 2020). Bosch (2020) and De Wet and Niesler (2020) explain that language technologies facilitate communication between human and computer by using ordinary language, including speech-to-text conversion. Reference is made to several initiatives focussing on different aspects of language technology

(cText^{®1}, SADiLAR², MuST³, SSV⁴ and the CSIR's human language technology research group). We draw a parallel between the CSIR's model, namely, AwezaMed⁵, an application that enables obstetricians to communicate with patients in their mother tongue (Aweza, n.d & Marais, 2020).

Notes

1. See <http://humanities.nwu.ac.za/ctext>.
2. See <https://www.sadilar.org/index.php/en/>.
3. See <http://engineering.nwu.ac.za/must>.
4. See <https://www.ce.sun.ac.za/research/signal-processing/>.
5. See <https://researchspace.csir.co.za/dspace/handle/10204/914>.

References

- Aweza. N.d. Language as a tool to build our nation. Available at: <https://aweza.co.za/>.
- Bosch, S. 2020. What is the status of language technology in South Africa? Paper presented at the Seminar on Language and the Fourth Industrial Revolution: Pretoria, South Africa.
- De Vries, A. & Docrat, Z. 2019. Attorneys' experiences of the use of multilingualism in the South African legal system. *In*: Ralarala, M.K., Kaschula, R.H. & Heydon, G. (Eds.). *New frontiers in forensic linguistics – Themes and perspectives in language and the law*. Bloemfontein: African Sun Media 131–154.
- De Vries, A. 2021. *Regsgeleerdes se beskouings van die rol van veeltaligheid in die Suid-Afrikaanse regspraktyk: 'n studie in toegepaste linguistiek*. PhD Thesis: Johannesburg: University of Johannesburg.



- De Wet, F & Niesler, T. 2020. Outomatiese spraak- en sleutelwoordherkenning in Afrikatale. Litnet, 5 August. Available at: <https://www.litnet.co.za/outomatiese-spraak-en-sleutelwoordherkenning-in-afrikatale/>.
- Docrat, Z., Kaschula R.H. & Ralarala, M.K. 2021. *A handbook on Legal Languages and the quest for linguistic equality in South Africa and beyond*. Stellenbosch: SunPress.
- Heydon, G. 2020. Forensic linguists can make or break a court case. So who are they and what do they do? *The Conversation*, 25 November. Available at: <https://theconversation.com/forensic-linguists-can-make-or-break-a-court-case-so-who-are-they-and-what-do-they-do-149920>
- Marais, L. 2020. Speech-to-speech smartphone translation for obstetrics. Paper presented at the Seminar on Language and the Fourth Industrial Revolution: Pretoria, South Africa.



Open data and the digital humanities in the time of COVID-19

Wigdorowitz, Mandy

University of Cambridge and University of Johannesburg
mw738@cam.ac.uk

Besharati, Sabba

University of the Witwatersrand (Wits)
sabba.besharati@wits.ac.za

McGillivray, Barbara

University of Cambridge
bmcgillivray@turing.ac.uk

access data - papers and journals - in the context of the Digital Humanities, using this special collection on COVID-19 as a working example.

Keywords: Journal of Open Humanities Data, COVID-19 data, open-data, Digital Humanities

Abstract

The rapid and global spread of COVID-19 has resulted in an international pandemic, making this a defining global health crisis of our time. The impact of the pandemic extends beyond health outcomes to include widespread social, economic, political, cultural, and environmental effects to the individual, community, and society at large. For the first time in our recent history, the far-reaching impact of this pandemic serves as a stark reminder of our global interdependence and the interconnectedness of disciplines. To mark this transformative period in time, the Journal of Open Humanities Data (JOHD) has embarked on a COVID-19 pandemic focused special collection, which embraces Digital Humanities methodologies. The data papers showcased in the special collection capture the human experience and global impact of COVID-19 through the perspective of the humanities in general, including the digital humanities more specifically. The papers describe open-access datasets covering various areas of enquiry around the pandemic, which draw on sources from diary contributions, oral and written narratives, photographs and maps, social media and video accounts, which in turn highlight the social and cultural impact and understanding of the virus and subsequent government lockdown measures. The papers in the collection have diverse and impactful reuse potential and are thus of interest for a range of digital humanities scholars. The lightning talk will discuss the importance and movement of open-



Imagining digital queer futures through trans comics on Instagram: an autoethnographic exploration

Swanepoel, Marne'
University of Pretoria
marneswan@gmail.com

Abstract

Working from José Esteban Muñoz's "queer futurity" and Judith (Jack) Halberstam's "queer failure" and "Gaga Feminism" I imagine possible queer futures through trans comics posted on the Instagram social media platform. Muñoz (2009, 1; 7) views queerness through a utopian lens and suggests that by striving for a queer future, better ways of being in the world can be imagined; queerness therefore rejects the "here and now" and favours an alternative futurity. Similarly, Halberstam (2012, 26) uses Gaga Feminism as a way to see new realities in our everyday lives. Through relying on an autoethnographic approach I visually express aspects that may shape a better future via my (and several other queer Instagram artists) experience(s) to others. My Instagram page, @Spec_On_The_Spectrum, then serves as a cyber-ethnography of my queer experiences and contributes to the larger agenda of digital humanities in finding alternative ways to present knowledge. To this end, I argue that Instagram trans comics offer counter-narratives that actively challenge harmful trans stereotypes and carry didactic potential for young and/or questioning trans folk and cisgender individuals.

I anticipate that alternative narratives of gender – whereby fluidity is embraced – may inform a desirable, equitable future for trans individuals and expose the redundancy and limitation of conventional understandings of gender, the binaries of sex and the boundaries of heterosexual divisions of the self. In my experience, being exposed to queer ways of being that deviate from the steadfast societal norms offers the freedom to embody and desire through alternative notions of the self. I suggest that Instagram's focus on sharing and visuality allows it to act as a vehicle whereby positive trans narratives may be shared. The population of optimistic trans

narratives may shape the kind of queer future that Muñoz (and myself) desire(s). My comics are employed throughout the study to celebrate a commitment to failure as a "counter-hegemonic approach" (Halberstam 2011, 12) as a way to undermine the stronghold of heteronormativity and academic writing.

Keywords: trans comics, autoethnography, queer future, queer failure, gaga feminism,

References

- Muñoz, J.E 2019, *Cruising utopia*. University Press, New York.
- Halberstam, J 2011, *The Queer Art of Failure*. Duke University Press, London.
- Halberstam, J 2012, *Gaga Feminism: Sex, Gender, and the End of Normal*. Beacon Press, Boston.



Cultural knowledge systems, Mandhwane and Mind Mobilisation for rural communities in the digital era

Ditshego, Magoro Kgopotso
Wits University
kdmagoro@gmail.com

Abstract

Information and communication technologies for development (ICT4D) is a theory and a strategy to bridge the digital divide in developing countries (Gomez, 2013; Walsham, 2017). Despite its application over 30 years, ICT4D is criticised for its failure to produce the desired development impact, partly because the exclusion of a socio-cultural approach by policymakers and practitioners has led to isolated solutions that do not contribute to inclusive digital adoption and usage (Avgerou, 2010; Hatakka & Anderson 2013; Ye et al, 2021). Scholars recommend a move to a socially and culturally embedded approach. However, there is a limited theory on culturally embedded digital transformation that considers collective human capabilities and cultural knowledge systems.

This paper presents a Digital Mandhwane theoretical approach based on action research in Mamaila Tribal Authority in Limpopo Province. Mandhwane is a transformation tool used by traditional South African communities for learning and knowledge transfer (Krige & Krige, 1947). This paper considers collective human capabilities and cultural knowledge systems, practices, and processes of rural communities as the foundation for culturally embedded digital transformation.

Keywords: ICT4D, digital transformation, capabilities, socio-cultural, cultural knowledge systems, digital adoption



Localisation of digital terminology development programs in Indigenous South African languages.

Hlungwane, Mmanape
Stellenbosch
22847162@sun.ac.za

Abstract

Terminology development is one of the most significant elements to the promotion of multilingualism and language development (Mmanape, 2020). Globally, the field of terminology has advanced through computer technologies (Alberts, 2010). However, the development of terminology for indigenous African languages does not only remain inadequate, but also difficult to access even with the development of computer technologies. The paper followed a qualitative method and thematic analysis approach. It argues for the localisation of digital term development programmes in African languages. Digital terminology tools that are well adapted to the complex linguistic structure of African languages yield efficiency in their term development and access.

Keywords: Indigenous South/African languages, Terminology, localisation, computer technology, linguistics.



Using ordinal logistic regression to analyse self-reported usage of, and attitudes towards swearwords

Eiselen, Roald

van Huyssteen, Gerhard B

Centre for Text Technology (CTeX^T), North-West

University, Potchefstroom, South Africa

{roald.eiselen/gerhard.vanhuysteen}@nwu.ac.za

Abstract

Likert-type data is commonly used in many research fields in humanities: from gaging the usability of different user-interface designs, to determining users' likeliness to vote for a particular political party, to evaluation of course materials—to name but a few examples. Despite its prevalence, there is still some disagreement within the statistics community on whether Likert-type scales are true ordinal variables, and by implication whether parametric tests are legitimate to be used in such cases (Endresen & Janda 2017). In this paper, we explore one parametric statistical test, viz. cumulative odds ordinal logistic regression (OLR), as an analysis method for self-reported data in the humanities. For illustration purposes, our focus is specifically on data of users' self-reported usage of, and attitudes towards swearwords, with the aim of identifying demographic attributes that are predictive of their usage and/or attitudes. After a brief description of the data we're using, including how the data is being collected, we give a layman's overview of OLR. Since one of our aims is to demonstrate the usability of OLR, we apply our discussion practically to a step-by-step procedure (based on Laerd Statistics 2015) that could be followed easily. We demonstrate the usefulness of the results in reporting on the usage of, and attitude towards two near synonymous Afrikaans swearwords. We show, amongst others, that the odds ratios that are generated as part of the modelling procedure can be used to draw direct conclusions about specific demographic groups.

Keywords: Likert scale, linguistics, offensiveness, ordinal logistic regression, statistical modelling



Swearing in South Africa: Multidisciplinary research on language taboos

*van Huyssteen, Gerhard B
Centre for Text Technology (CTeXt), North-West
University, Potchefstroom, South Africa
gerhard.vanhuyssteen@nwu.ac.za*

Abstract

Research on swearing (used here as a hypernym to include other phenomena and/or synonyms like cursing, profanity, taboo language, etc.) has been prevalent for many years internationally, also from a variety of scientific disciplines. Most of the research literature, however, is on swearing in English, although studies have also been conducted on some other languages. By contrast, very little to no research has been done on swearing within the South African context, which is quite surprising, given that using certain swearwords (i.e., racial slurs) is punishable by law.

To address this void, we established a multidisciplinary project with its primary roots in the digital humanities, and with inputs from and implications to (amongst others) linguistics, literary studies, communication studies, neurology, psychology, sociology, computer sciences, and law. This project (and specifically the topic of swearing) holds the potential to provide insights in human cognition and social interaction, while situating it broadly within the scope of the Fourth Industrial Revolution. The project commenced in July 2019, and is currently ongoing.

In this paper, we firstly provide a rationale for the project, before introducing each of the five subprojects. These subprojects pertain to swearing and the law; a swearing constructicon (a kind of online dictionary) for Afrikaans; swearing in the entertainment world and in the media; swearing as a linguistic innovation; and an end-user facing project website. We also report on some of the outputs from the project that are already available, and others that are still being developed and investigated. We conclude with a

brief overview of some of the potential impacts of the project.

Keywords: censorship, computational linguistics, cursing, language change, taboo



Analyzing conspiracies in context: a mix-methods approach to move beyond the dichotomy of facts vs. fiction

Iginio Gagliardone

University of the Witwatersrand

iginio.gagliardone@wits.ac.za

Keywords: Mis/disinformation, conspiracy theories, computational social science, networked communities

Abstract

This talk presents new empirical insights into what people do with conspiracy theories during crises. By suppressing the impulse to distinguish between truth and falsehood, which has characterized most scholarship on the ‘infodemic’, and engaging with claims surrounding two popular COVID-19 conspiracies – on 5G and on Bill Gates – in South Africa and Nigeria, it illustrates how conspiracies morph as they interact with different socio-political contexts. Drawing on a mixed-method analysis of more than six million tweets, it examines how, in each country, conspiracies have uniquely intersected with longer-term discourses and political projects. In Nigeria, the two conspiracies were both seized as opportunities to extend criticism to the ruling party. In South Africa, they produced distinctive responses: while the 5G conspiracy had limited buy-in, the Gates conspiracy resonated with deep-rooted resentment towards the West, corporate interests, and what is seen as a paternalistic attitude of some external actors towards Africa. These findings stress the importance of taking conspiracy theories seriously, rather than dismissing them simply as negative externalities of digital ecosystems. Situating conspiracies in specific dynamics of trust and mistrust can make an important difference when designing responses that are not limited to broadcasting truthful information, but can also enable interventions that account for deeply rooted sentiments of suspicion towards specific issues and actors, which can vary significantly across communities.



Reimagining Benin Bronzes with Generative Adversarial Networks

Atairu, Minne
Columbia University
mga2146@columbia.edu

Abstract

In this presentation, I describe Igùn—my ongoing research into a 17-year (1897-1914) artistic absence in Benin Kingdom. To investigate this absence, I trained a series of Generative Adversarial Networks (GANs) to synthesize prototypes of bronze objects that could have been created during the 17-year period.

Generative Adversarial Networks are widely used in machine learning for generative modeling. It employs two neural networks—a generator and discriminator adversarially trained to learn representations which can be visualized in the form of synthetic images. Given my research interest, GANs have the potential to facilitate the exploration of “what could have been created”.

What led to the 17-year artistic absence in Benin Kingdom? In 1897, British colonizers long frustrated by the Oba’s (King) control of inland trade in Southern Nigeria, used the excuse of a “massacre” to launch a punitive expedition in Benin. During the expedition, British colonial officers, torched the Oba’s palace, exiled the Oba, stole over 3000 bronze objects and subsequently sold them off to private and institutional collectors in Europe. The expedition ushered in an interregnum that lasted from 1897 to 1914. This 17-year interregnum disrupted a long-standing system of art production and patronage in the kingdom. Benin Oral Historians note that in the absence of an Oba (who was also considered “the sole commissioner of the arts”), Bronze casters turned to subsistence farming for survival.

Although, the official post-expedition reports found during my research refer to a surge in bronze casting due to increased colonial patronage, there is a dearth of visual documentation to identify such objects. I surmise that there was minimal to no art production during the 17-year interregnum.

Considering this absence, I trained a series of GANs with a dataset of looted Benin bronzes, exclusively curated from Western art museum who currently hold stolen bronzes. Finally, I present 3 prototypes based on emergent themes, namely— facial expressions (See Figure 1), and infancy (See Figure 2) which were underexplored in Benin’s classical bronze casting tradition.

This project is guided by the artistic and cosmological principles of the Igún Eronmwon—the royal guild of bronze casters who monopolized pre-colonial bronze production for the Oba (King). I have also considered ontological recommendations from elders in my Benin community.

Keywords: Benin Bronzes, GANs, AI Art



Figure 1: GAN-generated Benin commemorative bronze head showing facial expressions.



Figure 2: GAN-generated Benin commemorative bronze head exhibiting youngster-like facial features.

References

Ovonramwen, O., 1997. Opening ceremony address by Omo n'Oba n'Edo, Uku Akpolokpolo, Erediauwa, CFR, Oba of Benin. *African Arts*, 30(3), p.30.

Goodfellow, I., Pouget-Abadie, J., Mirza, M., Xu, B., Warde-Farley, D., Ozair, S., Courville, A. and Bengio, Y., 2014. Generative adversarial nets. *Advances in neural information processing systems*, 27.

Multimodality, Performance and Technopoetics in Johanna Waliya's bilingual African Digital Poetry

Ajab, Richard

*Department of Foreign Languages Faculty of Arts,
University of Uyo*

Waliya's digital poems, include an investigation into the technological process of his digital creation, and demonstrate an insight into the thematic orientations of his digital texts.

Keywords: Digital poetry, electronic literature, Johanna Waliya, Performativity, Animation

Abstract

The new media and ICT have dismantled the generic classification of literature, thereby shifting its traditional boundaries, innovating its artistic production and empowering its readership. Among the subgenres of literature, poetry has received the greatest technological innovations that have given rise to digital poetry which is fused with the convergence of text, image and sound, and hybridised with kinetic, interactive and hypertextual possibilities, making poetic expressions artificially intelligent.. Literary critics have explored the development, dynamics and aesthetics of Western electronic poetry and its various forms without much attention paid to budding African digital poems. My study, therefore, examines the aesthetics of multimodality, performance and technopoetics in Johanna Waliya's African digital poetry, a technology-enhanced artwork that is resourcefully rendered in French and English, two major languages spoken in Africa. Regretably this e-poetry has not been subjected to any known literary critical appraisal, though admittedly it is relatively new. With the theoretical lenses of multimodality, visual culture and semiotics, Waliya's digital collection has nine poems. His poesis presents a symbolic distinctiveness of each e-poem in performativity, dimensionality, temporality and interpretability as colours, graphics, letters, and images network and blend "into a nuanced language of digital poetic expression" in a digital environment. My analysis will facilitate the construction of the typology of



Digital Humanities (DH) as a bridge or barrier to access

Trollip, Benito

South African Centre for Digital Language

Resources (SADiLaR)

benito.trollip@nwu.ac.za

Abstract

As a new way to transform existing data and as a way of generating and processing new data, DH holds numerous advantages for access to information in multilingual settings. Countries or regions with resource-scarce languages or languages spoken in rural areas could benefit from the new frontiers that DH can open in terms of, amongst others, automatic speech recognition, simultaneous translation, or text simplification.

Access in terms of and through technology is complex and more technology does not always correlate to more or efficient access, especially for those who would benefit the most from it. Cornerstones of a functional society, like medical and legal services come

to mind when considering how access on various levels can be simultaneously improved and worsened when the socio-economic and multilingual context of Africa and other language rich regions is considered. When monolingualism keeps dominating in multilingual settings, the impact spreads further than psychological or social aspects, there are fundamental rights at risk when people are denied access to specific material. Having functioning, accessible and accurate digital resources, tools, or applications in place, developed through DH and AI (Artificial Intelligence), would add to people's quality of life. The balance of challenges and opportunities AI and DH bring to a complex, multilingual setting like South Africa should not be underestimated. In this contribution I aim to engage on the importance of technological advances in a society on the one hand, and the importance of the usefulness thereof to the ones living in that society on the other by mainly taking a conceptual approach.

Keywords: accessibility, multilingualism, South Africa



Morphology-based investigation of differences between spoken and written isiZulu

Marais, Laurette

CSIR

laurette.p@gmail.com

Wilken, Ilana

CSIR

inwilken@csir.co.za

Abstract

Research attempting to describe and quantify the differences between spoken and written language has been done for languages such as English, but not for isiZulu. In this paper, we present a quantitative investigation into such differences by considering the morphology of tokens in a transcribed spoken isiZulu corpus and a written isiZulu corpus. We use morpheme tags as a proxy for features that typically differ between spoken and written language, and calculate relative differences of the occurrence of specific morpheme tags from analyses produced by ZulMorph, a finite-state morphological analyser for isiZulu. This analysis presents information that could inform the development of voice-enabled computer applications for isiZulu.

Keywords: spoken language, written language, voice computing, isiZulu



A critique on the impacts of successful acceptance of Human language technology: A quantitative study of isiZulu Spellchecker

*Makhubu-Badenhorst, Lolie**

MakhubuR@ukzn.ac.za

*Fiblela-Hatting, Gugulethu**

9302617@stu.ukzn.ac.za

*Hadebe, Njabulo**

hadeben3@ukzn.ac.za

University Language Planning and

Development Office,

University of KwaZulu-Natal,

Howard College Campus,

Durban, South Africa.

milken@csir.co.za

Abstract

Proper spelling is essential to the ease of reading documents written in words. It is rare to find spell checkers dedicated to African languages, including isiZulu, one of the most widely spoken languages in South Africa. The University of KwaZulu-Natal developed the first isiZulu spellchecker with a 90% accuracy rating. The tool utilizes the isiZulu national corpus to train a spellchecker, enhancing the University of KwaZulu-Natal efforts in teaching the isiZulu language modules and assisting academic editors in making editorial changes to write in isiZulu. The aim of this paper is to determine the success of acceptance of isiZulu Spellchecker. Very limited studies have been carried out on the perceptions about isiZulu Spellchecker Technology (ISCT) acceptance. Objectives of this paper are to identify the factors that would impact on the acceptance of isiZulu Spellchecker; to determine the challenges and limitations experienced with the existing Spellchecker and to propose possible means of managing these challenges. The Technology Acceptance Model (TAM) theory will be employed in this study as it includes the perceived usefulness, ease of use, usage attitude, and usage intention. The proposed paper seeks to obtain appropriate study conclusions by

adopting quantitative methods to analyze data. An online questionnaire will be utilized in gathering data from UKZN staff members in the department of African language. Data will be analyzed with a statistical package for the social sciences (SPSS).

Keywords: IsiZulu SpellChecker, Technology Acceptance Model, Technology acceptance.



Mapping Indigenous Robben Island, the Music of the Khoekhoe and the Discovery of the Tip of Africa: GIS as Method for Cultural Preservation, Dissemination, Decolonization and Sustainability

Cole, Janie

South African College of Music

University of Cape Town

janie.cole@uct.ac.za

Abstract

This paper presents the Mapping Indigenous Robben Island (MIRI) project as a new GIS mapping prototype of the soundscape of the indigenous Cape and Robben Island as part of a thriving Indian Ocean world prior to colonialism, to explore the ways in which GIS mapping and analysis can be used as a method for cultural heritage preservation, dissemination, memorialization, decolonization and sustainability. The MIRI project constitutes a digital interactive exploration which focuses on the histories of pre-colonial Robben Island and the indigenous Cape peninsula as sites of indigenous knowledge systems and musical practices before the arrival of the first European settlers to the Cape in 1652 and prior to the age of European exploration. Drawing on new musical sources from the Khoesan archives, early accounts of the Island and Table Bay by 15th - and 16th -century foreign travelers, and musical iconography in ancient rock art, it reconstructs for the first time in digital format the musical soundscape of the early indigenous Cape and the Khoekhoe's ancient indigenous rituals, customs, musical heritage and instruments, and socio-cultural practices prior to colonialism. Moving away from a Eurocentric paradigm and the symbolic importance of the first European to round the Cape in 1488, it rather re-centres this early history of the so-called 'discovery' of the tip of Africa in the context of the pre-colonial history of the Cape and Southern Africa as part of an ancient thriving Indian Ocean trade world for over three centuries, with important Afro-Asian historical links, cultural exchanges and

migrations, specifically with the Chinese Ming Dynasty, whose fleets headed by Zheng He reached the Cape much earlier than the Europeans in 1421. Taking a unique approach to understanding the musical history of this region, this constitutes the first public musicology project about this important world heritage site to blend sound studies, archival research, musicology and the potential for spatial analysis, thus combining cultural mapping, cultural heritage preservation, community engagement with local Khoesan, and an outreach program in the form of a stylized multimedia and interactive website interface accessible to local and global communities for education and curriculum development. It examines how GIS can be used for memorialization and cultural preservation in redressing the marginalization of the history of the First People of Southern Africa, as well as being combined with storytelling of African history as a decolonizing methodology in relation to capturing indigenous knowledge production and legitimizing oral history as archive. Lastly, it shows how this mapping model may be used to promote heritage-based tourism, or as a model of sustainability for eco-tourism in helping reduce carbon footprint which could be applied to other cultural heritage sites worldwide.

Keywords: spoken language, written language, voice computing, isiZulu



A Soulful approach to AI: A comparative analysis of OpenAI's Hide and Seek and Pixar's *Soul*

Brittz, Karli
University of Pretoria
karli.brittz@up.ac.za

Abstract

Zylinska (2020) argues that popular culture narratives can encourage responsible conceptualisations of AI. Accordingly, this talk compares Pixar's *Soul* (Docter & Powers dir. 2020) to OpenAI's simulated multi-agent hide-and-seek environment, to make an ontological contribution to the discussion of ways of thinking about AI. In the OpenAI environment, AI agents were placed in a physically grounded world and learnt to play a team-based hide-and-seek game. Via self-play, they developed skills and learnt to use the environment to their advantage, adapting without human intervention. This is important because it suggests that: (1) we can approach AI in a way that grounds it in human-like environments and gives the neural networks the opportunity to become *artificially intelligent*; (2) AI can mimic emergent behaviour (Baker et al. 2019:1-2).

Comparatively, *Soul* explores the development of the human soul as its protagonist gets stuck in the 'Great Before'. Here, souls (with a strong visual resemblance to the OpenAI agents) prepare for life on Earth by developing various traits and skills. The film comments on the human ability to adapt, find purpose and form part of a larger human eco-system. The 'Great Before' also draws on digital tropes, indicating the possibility of being *digitally human*. Arguably, *Soul's* narrative compares to the development of the AI agents in the hide-and-seek simulation. This talk showcases these similarities to contend that digital humanities could make sense of AI with a *soulful* approach. That is, by focusing on emergence, adaptation and human practices, digital humanities can negate between the human and technological realms.

Keywords: Soul; OpenAI; multi-agent; emergence

References

- Baker, B, Kanitsheider, I, Markov, T, Wu, Y, Powell, G, McGrew, B & Mordatch, I 2020, 'Emergent Tool Use From Multi-Agent Autocurricula', *ICLR*, 11 February, p. 1-28.
- Docter, P & Powers, K (dir) 2020, *Soul*, Motion Picture, Pixar Animation Studios.
- Zylinska, J 2020, *AI and Art. Machine Visions and Warped Dreams*, Open Humanities Press, London.



Indigenous Language Preservation Through A Framework for Online Dictionary Creation

Gao, Andrew

Canyon Crest Academy

Andrewgao22@gmail.com

Abstract

As globalization continues, many indigenous languages are at risk of extinction due to the rising prevalence of English and other regional lingua franca. Experts have projected the loss of up to half of world languages by the year 2100. This difficult situation has been recognized by the United Nations General Assembly, which declared 2022-2032 as the International Decade of Indigenous Languages. Digital preservation of indigenous and endangered languages is a high priority. In the present study, the author developed an online, free dictionary for the Mesa Grande Ipai language, which is indigenous to the Southwestern United States. The dictionary is the first ever online dictionary for Mesa Grande Ipai. Mesa Grande Ipai vocabulary were sourced from a variety of text and digital sources. Over 1,300 phrases and terms were indexed in the dictionary, accessible at <http://ipai.wiki>. The dictionary allows users to not only search words in Mesa Grande Ipai and English, but also view all phrases in which the words occur, lending additional context. Programmed in Python using the open source Streamlit web application framework, the online dictionary format can be easily modified to suit other languages. Researchers and linguists seeking to create a simple online dictionary need only to download the code, substitute the vocabulary file for their own, and deploy the code to the web using a service such as Heroku. The author proposes an open-source framework for creating custom online dictionaries. This could represent an important step towards language preservation by democratizing access to digitization.

Keywords: indigenous, dictionary, framework, language preservation



An analysis of readability metrics on English exam texts

*Sibeko, Johannes,
Nelson Mandela University
Linguistics and Applied Linguistics
Johannes.Sibeko@mandela.ac.za*

*van Zaanen, Menno
South African Centre for Digital Language Resources
University of Cape Town
Menno.vanZaanen@nu.ac.za*

Abstract

Readability metrics provide information on how difficult a text is to read. This information is relevant, for instance, to identify suitable texts for learner readers. Readability metrics have been developed for several languages, but no such metrics have been developed for the indigenous South African languages. One of the limitations in the development of the metrics is the availability of texts in these languages for which the readability is known. To resolve this issue, we would like to consider texts that are used in final year exams of language subjects at highschool. We expect these texts to have consistent readability throughout the years. Additionally, in South Africa, language subjects may be taught both as home language or first additional language. We expect there to be differences in readability between the exam texts for these subjects. To test these assumptions, in this article, we compute readability scores using nine existing readability metrics for the final year exams of English home language and English first additional language. The results show that indeed the readability of the texts is consistent over the years and significantly different between the two subjects. Generalizing over these results, we expect that we can use final year exam texts of other languages to develop readability metrics for the indigenous South African languages in future work. An analysis of the performance of the readability metrics on the English texts serves as a starting point to identify useful text properties to use for the development of the readability

metrics for the indigenous South African languages.

Keywords: English, readability metrics, text readability, highschool exam texts



If Algorithms are not Gods, what are they? Religious metaphors, power and agency in digital culture

John, Sokfa F.

University of KwaZulu-Natal

SARChI in Sustainable Local Livelihoods, School of Management, IT and Governance

sokfa.john@gmail.com

Abstract

Both technology and religion have always been important sites of contestations, power and agency, and central to major defining moments in society's evolution. At the heart of the current digital technological transformation are the algorithms that power and animate it. Algorithms shape our lives in subtle but defining ways that raise critical questions about power and agency in socio-technological processes. Academic and popular discourses have sought ways to make sense of algorithmic power beyond their technical development and functioning. One of the major popular discourses theologizes algorithms, speaks of them as gods and uses religious language to represent or analyze their social influence. This paper will discuss how and why religion offers the most meaningful language and analogies to understand and come to terms with the social power and agency of algorithms. Only religion, arguably, offers a well-developed language and adequate metaphors for making sense of algorithmic power due to their nature, mysteriousness and the magnitude of their influence. This has implications for a broad range of issues, such as 1) efforts to pursue more ethical design and deployment of algorithms 2) decolonial/postcolonial discourse on datafication, and, 3) the secularity discourse on the place of religion and technology in social progress.

Keywords: algorithms, religious language, metaphor, power, agency



Towards impactful Research Infrastructures: Mediating research activities

Steyn, Juan

South African Centre for Digital Language Resources

Juan.Steyn@mnu.ac.za

Abstract

Digitally driven technology has become an extension of the human experience, at least so within socioeconomic spaces where technology is accessible. This notion, in the broad sense, of technology playing a mediating role is not new. The field of Phenomenology, how things are experienced, and more specifically Postphenomenology, pertaining to technological mediation or human-technology interactions, interrogates this (Zwier et al., 2016).

Ihde (cited by Zwier et al., 2016) explains this through the activity of chopping wood. For a lumberjack, the focus lies on the piece of wood, where the angle, force and physical attributes of the axe fades away as it becomes an extension of the human engaging in the activity. The inverse holds true where, if the tool was not fit for purpose, the activity will be interrupted, diverting focus to the defective tool.

Within the context of Research Infrastructures (RI), of which the South African Centre for Digital Language Resources (SADiLaR) is one, RIs are described as enablers for research and innovation, in a way “research tools”. The question arises whether, linking to the example, RIs are creating impactful mediated experiences for their users, predominantly the scientific community?

This lightning talk will reflect on what is still required to help RIs to maintain and increase impact. SADiLaR is in a unique position in that it can provide both the research datasets, “*wood*”, and technologies, “*axe*”, for a researcher. This is important during tough economic times and where traditional research data gathering has been impacted by the pandemic.

Keywords: Research Infrastructures; SADiLaR; Postphenomenology

Acknowledgements

This research is made possible with the support from the South African Centre for Digital Language Resources (SADiLaR). SADiLaR is a research infrastructure established by the Department of Science and Innovation of the South African government as part of the South African Research Infrastructure Roadmap (SARIR).

References

Department of Science and Technology 2016, ‘South African Research Infrastructure Roadmap.’, view 29 August 2021, <https://www.gov.za/sites/default/files/gcis_document/201610/sa-research-infrastructure-roadmap.pdf>

SADiLaR, 2021, ‘About SADiLaR’, view 29 August 2021, <<https://www.sadilar.org/index.php/en/about/about-sadilar>>

Smith, D.W., ‘Phenomenology’, The Stanford Encyclopedia of Philosophy (Summer 2018 Edition), Edward N. Zalta (ed.), view 29 August 2021, <<https://plato.stanford.edu/archives/sum2018/entries/phenomenology/>>.

Zwier, J, Blok, V & Lemmens, P, 2016, ‘Phenomenology and the Empirical Turn: a Phenomenological Analysis of Postphenomenology.’, *Philos. Technol.* 29, 313–333 (2016), view 29 August 2021, <<https://doi.org/10.1007/s13347-016-0221-7>>



UPLorc: A Networked, LiveCoding Laptop Orchestra based in South Africa

Laubscher, Melandri
University of Pretoria
School of the Arts: Department of Music
m.laubscher@tufs.co.za

Abstract

In this article I report on the current and emerging practices of UPLorc (University of Pretoria Laptop Orchestra), a networked live coding laptop orchestra based in Southern Africa. Since its establishment in 2019, the ensemble has performed live coded network music using the TidalCycles live coding environment at various conferences and live streamed events. The development of these practices is owed to, among other aspects, the fieldwork experience I obtained with the trans-continental network ensemble SuperContinent. I describe how this knowledge has been implemented into the activities of UPLorc, alongside some of our own emerging practices. Particular problems that emerged during the performance preparation process is also highlighted, as well as the strategies that could be implemented to address some of these problems.

Keywords: Digital Humanities, Networked Communities, Network Music Performance, Laptop Orchestra Pedagogy, Live Coding



Finding topic boundaries in literary text

Heyns, Nnette
North West University
nette.heyns@gmail.com

van Zaanen, Menno
South African Centre for Digital Language Resources
University of Cape Town
Menno.vanZaanen@mnu.ac.za

Abstract

When performing a distant reading analysis of large amounts of literary texts, we would like to be able to automatically identify the high level structure or story lines of these texts. Story lines are not always linear, but contain transitions, such as flashbacks or changes of scenery. To identify these transitions, we propose a system that aims to identify a boundary describing such a transition. First, we split the text in short snippets. Next, topics are assigned to each of the snippets using LDA, a topic modelling approach. Based on this sequence of LDA topics, potential transition boundaries between snippets are identified. Potential transitions occur between snippets with the smallest intersection of the LDA topics that occur on either side of the potential transition. If multiple potential transitions are available, the system selects one at random. To evaluate this system, we apply it to the concatenation of two texts such that the real boundary is known. We provide results of this system with respect to a random baseline and an oracle system that always selects the best transition when more than one possible transition is available. The system consistently outperforms the baseline. Future work will focus on extending this system to allow for the identification of multiple transitions.

Keywords: topic modelling, LDA, boundary identification



Modelling Multiple Representations in an OWL Ontology

Gillis-Webber, Frances
University of Cape Town
fgilliswebber@cs.uct.ac.za

Abstract

Modelling multilinguality in an OWL ontology is primarily done using multilingual labels. This approach is annotative only, with the result that the underlying classes remain the same, regardless if there are slight differences in conceptualisation between the natural languages being represented. One language typically takes precedence (usually English), and where there is not a 1-1 mapping to another language, the term is then translated. If the ontology is then localised for question-answering or other such applications, inaccurate answering and verbalisations may result.

We introduce a conceptual model which enables multiple representations in an OWL ontology to be modelled, where a representation can be natural language-specific or language-independent. For the latter, this is intended as a merged view of the language-specific representations. Classes, axioms and other entities are associated with their applicable representations, with overlapping meanings between representations also able to be modelled. The result is a multi-representation ontology that consists of the following components: base ontology, modules and rules. Using algorithms, each representation can be generated at run-time or cached as a module, available for use in other ontologies. An ontology can then be filtered by each representation, either within an OWL application or by using SPARQL queries. The result is a new approach for modelling a multilingual OWL ontology, allowing for the representation of multiple natural language-specific conceptualisations of a domain. Our focus is on OWL 2 ontologies although this work can be similarly applied to Linked Data and

other Resource Description Framework (RDF) documents.

Keywords: multilingual OWL ontologies, ontology development, Semantic Web

Acknowledgements

This work was financially supported by Hasso Plattner Institute for Digital Engineering through the HPI Research School at UCT.



PHAROS: The International Consortium of Photo Archives

Louisa Wood Ruby
Head of Research
The Frick Art Reference Library
New York, NY, USA 10021
woodruby@frick.org

Abstract

My lightning talk will present an international initiative that seeks to preserve and enhance both analogue and born-digital materials by creating a new type of knowledge resource using the latest emerging technologies. PHAROS, The International Consortium of Photo Archives, was formed to respond to the accelerating need to make fully accessible to a new generation of scholars the unique materials found in research photo archives around the world. The Consortium is currently engaged in a pilot project to support the creation of a digital research platform using the ResearchSpace software (British Museum) that will contain nearly 1.5 million images with accompanying scholarly documentation from six of the fourteen PHAROS member institutions. The platform is making use of technologies such as automated image searching and Linked Open Data to create an essential resource for those engaged with new research methodologies within the framework of digital humanities. It will have the capability for researchers to repurpose the data for new research applications such as machine learning and artificial intelligence (AI) that are in constant need of large datasets of images with well-researched metadata. In addition, it will make significant components of the

corpus of Western and eventually non-Western art openly accessible for the use of researchers across the globe. By January of 2022 we will open a beta site for researchers, and begin actively looking for more partners, especially

photo archives that contain non-Western art. Eventually we estimate that the site will contain over 20 million images.

Keywords: Digital Art History; Linked Open Data; Computer Vision; Photo Archives, Art



Disrupting established trajectories of success: in search of alternative models of making and marketing maskanda

Olsen, Kathryn, University of KwaZulu-Natal,
Olsenk1@ukzn.ac.za

Buthelezi, Bhekani, University of Zululand,
buthelezibhekani@gmail.com

Sewchurran, Anusharani, Durban University of
Technology, Anusharanis@dut.ac.za

Abstract

Maskanda is associated with the idea of tradition. Its beginnings in early the 20th century, are rooted in the music of Zulu migrants who lived in a permanent state of inbetweenness that was marked by a dialectic of past and present, rural and urban, tradition and modernity. In these early years, maskanda served as a way of counteracting the disjuncture inherent in labour migrancy through musical constructions of home and belonging. While maskanda is still most often claimed as traditional Zulu music, maskanda is fluid, having moved from the migrant yearning for 'home space' (Olsen 2014), to symbolising notions of authentic 'Zuluness' (Titus 2008), to drawing on the ideals of global music commodities, like hip hop and gospel. The genre is popular in KwaZulu-Natal, and maskanda musicians have performed at major global events such as the Olympic Games and World Cup Soccer events. Its world music status has moved performance and fandom from the traditional and mass media forms to digital spaces. This article considers shifting trends in maskanda music-making, its philosophical, and spiritual dimensions to current forms of celebrity and commodification of maskanda artists on social media. The article takes a critical media lens in order to explore how maskanda and maskanda artists are shaped online. Starting from the philosophical question of why artists make music, the article also reflects on powerful influences of capital on maskanda artists and the stylized performance practices associated with it. Conflicting discourses emerge where older artists speak of making music as a necessary means of feeling complete, while younger artists look to

votes on Youtube for validation. We argue that maskanda, in its contemporary digital form aggressively promotes a commodified art and artist where the spectacle of wealth and conflict with other artists are garnered to generate large, digitally interactive fandoms. As a result, important aspects of the genre are displaced. One such facet is the shift in contemporary forms of the Isibongo section of performance. Traditionally, Isibongo is an opportunity for artists to locate themselves in a context by articulating where they come from, what natural environment surrounds them, their musical lineage etc. In current Isibongo, artists veer exclusively towards declarations of supremacy and dominance in the field and hence the possibilities for collective remembering and acknowledgement of the history and context of the artist and art form diminish. The shift in Isibongo reflects a loss of belonging where maskanda is subsumed into information capital. Marx introduced the labour theory of value to account for systems of exchange and realisation of profit in the marketplace. Time was the first metric taken into account in the labour theory of value, where the value of a commodity was based on the amount of time taken to create it. In the information era, the determinates of digital value extend to include other calculable metrics such as 'views', 'downloads', 'number of followers', 'traffic' and 'bounce rates'. Absent in this discourse are notions of human need that may exist outside of capital exchange, such as spirituality, belonging, and self-determined meaning making. (Fuchs 2016, 60-65) Marx in his explication of use value and exchange value, maintains that alienation can occur when exchange value subsumes use value and when, in the exchange of labour power, profit is placed above human need. The shifts in Isibongo reflects a subtraction of Maskanda from 'community' to the individual celebrity artist, indicating a predominance of exchange value over use value. The artist is commodified where digital traffic is elevated, their potential for adding value to human need, minimised. Thus in information capital, a double alienation occurs with artist from art form and art from community. We argue that in order to disrupt this trend, and to advance powerful meaning making potentials of



maskanda, other forms of digital engagement is needed. We explore multimodal strategies that could create alternatives for music production. These vary from recorded face-to-face workshops with senior maskandi artists, to using free online archiving tools such as artsteps (<https://www.artsteps.com>) which allows for virtual reality photography exhibitions, musarch (<http://www.musarch.com/>) which is museum archiving software. These tools allow for open source cataloguing and the creation of engaging online repositories. We explore these platforms as a means of subverting the pull to commodified digital culture, by determining what free or affordable platforms we can feasibly appropriate in the pursuit of alternative frames for music production and dissemination – frames that allow music to be reclaimed as a medium of use value, to curate alternative frames for pursuing music production.

Keywords: Maskanda music, social media, commodification

