# 6. EDUCATION

## 7. CURRENT RESEARCH FOCUS

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| Extended Reality | Persuasive Technologies | Large Language Modelling |
|  | IT for Behaviour Change | Systems Analysis & Design |

## 8. RESEARCH PROJECTS (List and briefly explain current research projects)-since last promotion

1. ***The pre-and postnatal care chatbot for the Akan-Speaking Communities project (01/2025 – 06/2026)*** seeks to provide a culturally relevant chatbot, *Ɔbaa Panin*, to provide maternal health support in the Akan language to pregnant and expectant mothers. By integrating text-based conversational agents with female voice-based interfaces, this project addresses barriers to healthcare access, including low literacy levels and limited maternal health knowledge, particularly in rural areas. The chatbot will leverage resources from the UGSpeechData Project to offer personalised guidance and promote maternal health literacy, adherence to healthcare practices, and informed decision-making. We will evaluate its usability, cultural relevance, and impact on healthcare utilisation, while identifying challenges to adoption. This will inform the scalability of linguistically appropriate technological solutions for maternal health support in low-resource settings.
2. ***The Automatic Profane and Vulgar Detection in Akan Language project (11/2024 – 10/2025)*** seeks to develop a computational model to identify and filter profane and vulgar expressions in Akan. It seeks to address the growing need for content moderation tailored to local languages and cultural norms, and will enhance digital communication and entertainment in Akan. It leverages Natural Language Processing (NLP) and machine learning techniques to create a culturally sensitive annotated dataset of Akan text and audio. A classifier shall be trained to identify inappropriate content to facilitate real-time content moderation that can be integrated into social media platforms to detect and block profane language in posts, comments, and messages. This will foster safer and more respectful online interaction among Akan-speaking users.
3. ***The ASR Models for Non-Standard Speech in Ghanaian Languages project (07/2024 – 12/2025)*** seek to develop Automatic Speech Recognition (ASR) systems that address nonstandard speech variations in Akan, Ewe, Ga, Dagbani, and Dagaare for impairments such as stammering, cleft-related speech challenges, post-stroke aphasia, and speech affected by cerebral palsy. By accommodating these variations along with dialects, accents, and informal speech patterns, the project will create inclusive models that enhance the accessibility and usability of AI tools. For instance, individuals with post-stroke speech impairments can use voice-enabled digital tools for communication, whereas people with cleft-related speech difficulties can access tailored educational resources in their native language. This study aims to enhance accessibility and inclusivity in language technology, reduce communication barriers, promote independence, and provide equitable access to technology for individuals with diverse speech needs in Ghanaian communities.
4. ***The ASR Models for Standard Ghanaian Languages project (01/2024 – 07/2025)***focuses on developing robust Automatic Speech Recognition (ASR) systems for six widely spoken Ghanaian languages: Akan, Ewe, Ga, Ikposo, Dagbani, and Dagaare. By investigating advanced techniques in language modelling, acoustic processing, and data integration, this project seeks to enhance recognition accuracy while addressing challenges, such as limited linguistic resources, variations in pronunciation, and language-specific phonetic structures. The resulting model will support applications such as transcription services, voice-assisted technologies, and language learning tools and enable efficient communication in multilingual workplaces in Ghana. It will provide voice-to-text accessibility for individuals with low literacy levels and aid digitisation in education and governance. It will integrate Ghanaian languages with modern technological solutions to foster cultural preservation and technological inclusivity.
5. ***The TTS Machine Learning Models for African Languages project (01/2024 – 05/2025)*** focuses on creating and optimising scripts for training Text-to-Speech (TTS) machine learning models tailored to African languages, specifically Akan, Ewe in Ghana, and Baoulé in Abidjan. This project seeks to develop natural language communication tools by improving the quality and fluency of speech synthesis in these languages. This work will contribute to effective voiceenabled technologies for some West African speakers and enhance accessibility and usability in various applications such as voice assistants, language learning platforms, and digital content creation.
6. ***The Dataset for Neural Machine Translation in Ghanaian Languages project (02/2023 – 02/2024)*** involved the creation of parallel datasets of transcribed audio and text data for Neural Machine Translation in five Ghanaian languages: Akan, Ewe, Ga, Dagbani, and Ikposo. The dataset created for this project was made open source to enable others to use and build upon it. This open-source dataset played a crucial role in supporting Google’s development and release of the Akan voice search feature in November 2024. By making the dataset publicly available, the project promotes inclusivity and supports the advancement of voice-enabled technologies for local languages in various sectors, such as education, governance, and business.
7. ***The Virtual Reality for Tertiary Education project (01/2022 – 12/2024)***investigated how persuasive software features in Behaviour Change Support Systems (BCSS) and immersive Virtual Reality (VR) learning environments can improve learner compliance and enhance students' learning satisfaction. The project explored how persuasive features, such as unobtrusiveness, design aesthetics, primary task support, and perceived persuasiveness in VR learning environments, contribute to student engagement, fostering a more immersive and effective educational experience. The findings demonstrated the importance of tailoring these features to meet the distinct needs of users at different stages of engagement and that VR educational tools that adapt to users' evolving needs enhance compliance, engagement, and learning satisfaction.

## 9. ACADEMIC APPOINTMENTS AND AFFILIATIONS

## 10. ADMINISTRATIVE APPOINTMENTS AT UNIVERSITY OF GHANA

## 11. OTHER PREVIOUS ADMINISTRATIVE APPOINTMENTS (Outside of University of Ghana)

## 12. MEMBERSHIP OF BOARDS AT UNIVERSITY OF GHANA

# 13. COMMITTEE MEMBERSHIPS AT UNIVERSITY OF GHANA

## 14. COMMITTEE MEMBERSHIPS OUTSIDE OF UNIVERSITY OF GHANA

## 15. OTHER EXTENSION SERVICES

## 16. EXTERNAL EXAMINER/ASSESSOR FOR PROMOTION

## 17. GRANT SUPPORT AND/OR RESOURCE MOBILIZATION

# 18. CONSULTANTSHIPS

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| **Date** | **Task** |
| 11/2024-12/2024 | Asset management digitalization at Kofi Annan International Peacekeeping Training Centre |
| 04/2023-05/2024 | EOCO: Development of case management systems for Ghana |
| **Date** | **Task** |
| 05/2022-09/2022 | Developed a pension management system for Ghana Police Service |
| 04/2018 | Capacity building training in data analytics for eni Ghana |
| 01/2015-09/2017 | Capacity building training for Liberia National Security Services |
| 09/2014 | Capacity building training for Registered Administrative Managers of Nigeria |
| 12/2013 | eLeadership capacity building training for Ghana Civil and Public Servants |
| 06/2013 | Capacity building for staff of SSNIT on IT disaster recovery planning |
| 10/2012-09/2013 | Development and Implementation of ERP system at Jospong/Zoomlion Group |

## 19. EDITORSHIP AND EDITORIAL BOARDS (if any)

|  |  |
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| **Role** | **Book** |
| Co-editor | Modern Theories and Practices for Cyber Ethics and Security Compliance (pp. 1-400). Hershey, PA: IGI Global. doi:10.4018/978-1-7998-3149-5 |

## 20. MANUSCRIPT REVIEWS

# *21.* MEMBERSHIP OF PROFESSIONAL SOCIETIES/ASSOCIATIONS

***22.* TEACHING (*since last promotion)***

## 23. GRADUATE THESES/DISSERTATIONS SUPERVISED

## 24. UNDERGRADUATE STUDENT RESEARCH SUPERVISED (Since last promotion, if any)

## 25. CONFERENCES SEMINARS, AND WORKSHOPS

## 26. PUBLICATIONS (Arrange in chronological order beginning with the latest)

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| **PUBLICAT ION TYPE** | **Year** | **Title of Publication** | **Name of Journal /Publication Outlet** | **Authorship** |
| *Conference proceedings* | *In press* | The Use of Artificial Reality in Road Safety: A Systematic Review | *Proceedings of* International  Conference on Artificial  Intelligence and  Virtual Reality | Nutrokpor, C., **Wiafe, I.,** Atsakpo, E. D.,  Ekpezu, Wiafe, A.,  Ekpezu, A. O |
| *Journal* | *2025* | Comparative Evaluation of Learning Technologies using a Randomized Controlled Trial:  Virtual Reality, Augmented  Reality, Online Video  Platforms, and Traditional  Classroom Learning | Education and Information Technologies | **Wiafe, I.,** Ekpezu, A.  O., Gyamera, G. O.,  Winful, F. B. P.,  Atsakpo, E. D.,  Nutrokpor, C., & Gulliver, S. R*.* |

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| **PUBLICAT ION TYPE** | **Year** | **Title of Publication** | **Name of Journal /Publication Outlet** | **Authorship** |
| *Journal* | *2024* | Learning Satisfaction in  Virtual  Reality: The Role of  Persuasive Design | International Journal of  Human-Computer  Interaction | **Wiafe, I.,** Ekpezu, A.  O., Gyamera, G. O.,  Winful, F. B. P.,  Atsakpo, E. D.,  Nutrokpor, C., &  Gulliver, S. R |
| *Journal* | *2024* | Persuasive software features as antecedents to perceived compliance within physical activity behavior change support systems | Behaviour & Information Technology | Ekpezu, A. O., **Wiafe,**  **I.,**  Oinas-Kukkonen, H |
| *Conference Proceedings* | *2024* | Examining Continuance  Intention to Exercise in a  Virtual Reality Environment | Proceedings of the 57th  Annual Hawaii International  Conference on System  Sciences | Ekpezu, A.,  Nutrokpor, C., **Wiafe,**  **I.,** & OinasKukkonen, H |
| *Conference Proceedings* | *2024* | Technological factors that influence user compliance with behavior change support systems: a systematic review | Proceedings of the 57th  Annual Hawaii International  Conference on System  Sciences | Ekpezu, A. O., **Wiafe, I**., & Oinas-Kukkonen |
| *Journal* | *2023* | Predicting Adherence to  Behavior Change Support  Systems Using Machine  Learning: Systematic Review | Journal of Medical Internet  Research- Artificial  Intelligence | Ekpezu, A. O., **Wiafe, I.,** & OinasKukkonen, H. |
| *Journal* | *2023* | Enhancing Perceived Health  Competence: The Impact of  Persuasive Social Support Features in Health and Fitness Apps. | International Journal of  Human–Computer  Interaction | Ekpezu, A. O., **Wiafe, I.,** & OinasKukkonen, H. |
| *Conference Proceedings* | *2023* | Design and evaluation of a persuasive road marking system for controlling speeding behavior | Proceedings of International  Academic Mindtrek  Conference | **Wiafe, I.,** Doe  Atsakpo, E.,  Nutrokpor, C., Ham, J., & Gulliver, S. |
| *Conference Proceedings* | *2023* | Investigating the Determinants of Compliance Intention in  Behavior Change Support  Systems | AMCIS 2023 Proceedings | Ekpezu, A. O., OinasKukkonen, H., & **Wiafe, I.** |
| *Conference Proceedings* | *2023* | Credibility in Persuasive  Systems: A Systematic  Review | Lecture Notes in Computer Science, | Koranteng, F.N., Matzat, U., **Wiafe, I**., Ham, J. |
| *Journal* | *2022* | Using genetic algorithms for music composition: implications of early termination on aesthetic quality | International Journal of Information Technology | Wiafe, A., Nutrokpor,  C., Owusu, E., Kastriku F A & **Wiafe**  **I.** |

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| **PUBLICAT ION TYPE** | **Year** | **Title of Publication** | **Name of Journal /Publication Outlet** | **Authorship** |
| *Journal* | *2022* | Speed Monitoring and  Controlling Systems for Road  Vehicle Safety: A Systematic  Review | Advances in Transportation Studies | Armah Z. A., **Wiafe**  **I**., Koranteng F. N &  Owusu E |
| *Journal* | *2022* | Assessing the impact of persuasive features on user’s intention to continuous use: the case of academic social networking sites | Behaviour & Information Technology | **Wiafe, I**., Koranteng, F. N., Kastriku, F. A., & Gyamera, G. O. |
| *Journal* | *2022* | The Use of Machine Learning  Algorithms in the  Classification of Sound: A  Systematic Review | International Journal of  Service Science,  Management, Engineering, and Technology | Ekpezu, A. O.,  Katsriku, F., Yaokumah, W., & **Wiafe, I.** |
| *Conference Proceedings* | *2022* | Supporting to be Credible:  Investigating Perceived Social  Support as a Determinant of  Perceived Credibility | Lecture Notes in Computer Science | Koranteng, F.N., Ham,  J., Matzat, U., **Wiafe,**  **I**. |
| *Journal* | *2022* | The role of usability, aesthetics, usefulness and primary task support in predicting the perceived credibility of academic social networking sites | Behaviour & Information Technology | Koranteng F N, Ham  J, **Wiafe I** & Matzat  U |
| *Journal* | *2021* | Using deep learning for acoustic event classification: The case of natural disasters | The Journal of the  Acoustical Society of America | Ekpezu, A. O., **Wiafe,**  **I**., Katsriku, F., & Yaokumah, W. |
| *Journal* | *2021* | An advanced ensemble  classification for object recognition | Neural Computing and Applications | Owusu, E., & **Wiafe,**  **I.** |
| *Journal* | *2021* | Factors that influence user perception of ubiquitous monitoring environments: An  empirical study in a developing country | Journal of Ambient  Intelligence and Smart  Environments | **Wiafe, I**., Koranteng, F. N., Owusu, E., & Alimo, S. |
| *Journal* | *2021* | Soil Medium Electromagnetic  Scattering Model for the  Study of Wireless  Underground Sensor  Networks | Wireless Communications and Mobile Computing | Banaseka, F. K.,  Franklin, H., Katsriku,  F. A., Abdulai, J.-D.,  Ekpezu, A., & **Wiafe,**  **I** |
| *Conference Proceedings* | *2021* | Exploring the Impact of  Persuasive System Features on  User Sentiments in Health and  Fitness Apps | CEUR Proceedings | Nutrokpor, C.,  Ekpezu, A. O., Wiafe,  A., & **Wiafe, I** |
| *Conference Proceedings* | *2021* | Exploring the Impact of  Persuasive Features on  Customer Satisfaction Levels | Lecture Notes in Computer Science | Alhammad, M. M.,  **Wiafe, I.,** Gulliver, S. R. |

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| **PUBLICAT ION TYPE** | **Year** | **Title of Publication** | **Name of Journal /Publication Outlet** | **Authorship** |
|  |  | of E-Commerce Websites Based on the Kano Model |  |  |
| *Conference Proceedings* | *2021* | Investigating User  Perceptions of Persuasive  Design Elements that  Influence Perceived  Credibility | Lecture Notes in Computer Science | Koranteng, F.N., Ham J., **Wiafe, I**. |
| *Technical Report* | 2021 | Early Career Researchers and  Digitalisation – Insights from  Ghana, Kenya, and South  Africa | Nuffic Neso South Africa | Boshoff, H.;  Dhlamini, I.; **Wiafe, I.**; Heleta, S.; Ayoo, P.  and Jowi, J., |
| *Journal* | *2020* | Analysis of Machine Learning Techniques for AnomalyBased Intrusion Detection. | International Journal of  Distributed Artificial Intelligence | Yaokumah, W., & **Wiafe, I.** |
| *Journal* | *2020* | The role of norms in information security policy compliance | Information and Computer Security | **Wiafe, I.,** Koranteng,  F. N., Wiafe, A.,  Obeng, E. N. and  Yaokumah, W |
| *Journal* | *2020* | Understanding trust on social networking sites among tertiary students: An empirical study in Ghana | Applied Computing and Informatics | Koranteng, F. N., **Wiafe, I**., Katsriku, F. A., & Apau, R. |
| *Journal* | *2020* | Artificial Intelligence for  Cybersecurity: A Systematic  Mapping of Literature | IEEE Access | **Wiafe, I**., Koranteng,  F. N., Obeng, E. N., Assyne, N., Wiafe, A., & Gulliver, S. R. |
| *Journal* | *2020* | Persuasive social features that promote knowledge sharing among tertiary students on social networking sites: An empirical study | Journal of Computer Assisted Learning | **Wiafe, I**., Koranteng,  F. N., Owusu, E., Ekpezu, A. O., &  Gyamfi, S. A |
| *Journal* | *2020* | Controlling driver overspeeding with a persuasive and intelligent road marking system | Advances in Transportation Studies | **Wiafe, I**., Abdulai, J.D., Katsriku, F.,  Kumi, J. A.,  Koranteng, F. N., &  Boakye-Sekyerehene,  P |
| *Journal* | *2020* | Factors that affect acceptance and use of information systems within the Maritime industry in developing countries: The case of Ghana | Journal of Systems and Information Technology | **Wiafe, I**., Koranteng,   1. N., Tettey,   T., Kastriku,  F.A. & Abdulai, J.-D. |
| *Book* | *2020* | Modern Theories and  Practices for Cyber Ethics and  Security Compliance | IGI Global | Yaokumah, W.,  Rajarajan, M.,  Abdulai, J., **Wiafe, I**., & Katsriku, F. A. |

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| **PUBLICAT ION TYPE** | **Year** | **Title of Publication** | **Name of Journal /Publication Outlet** | **Authorship** |
| *Book chapter* | *2020* | Students' Intentions on Cyber Ethics Issues | Modern Theories and Practices for Cyber Ethics and Security Compliance | **Wiafe, I.,** Yaokumah, W., & Kissi, F. A |
| *Journal* | *20219* | An empirical study of the relationship between social networking sites and students’ engagement in higher education | Journal of Educational Computing Research | Koranteng, F. N.,  **Wiafe, I**., & Kuada, E. |
| *Journal* | *2019* | Factors that Promote  Knowledge Sharing on  Academic Social Networking  Sites: An Empirical Study | Education and Information Technologies | Koranteng, F. N., & **Wiafe, I**. |
| *Conference Proceedings* | *2019* | A Dynamic Software Startup Competency Model | Lecture Notes in Business Information Processing | Assyne N. **Wiafe, I**. |
| *Journal* | *2018* | Design and Implementation of an Integrated Web Application for the Motor Traffic and Transport Directorate of the  Ghana Police Service | Science and Development | Debrah, E. O., Abdulai JD, **Wiafe, I.**  & Katsriku F. A. |
| *Journal* | *2018* | Redefining the Concept of Big Data: A Ghanaian Perspective | Science and Development | Afful E., Adu-Manu,  K. S., Yamoah, G. G.,  Abdulai, J-D, Gyamfi,  N. K, Adjei, E., **Wiafe, I.** & Katsriku, F. A. |
| *Book chapter* | *2018* | The Role of U-FADE in  Selecting Persuasive System Features | Encyclopedia of Information Science and Technology | **Wiafe, I**. |
| *Conference Proceedings* | *2018* | Persuading Vehicular Drivers to Avoid Over Speeding using Intelligent Road Markings | CBAS - Science and Development Platform | **Wiafe, I.**, Abdulai J- D., Arkligo, M. A. and Kumi, J. A. |
| *Conference Proceedings* | *2018* | Can an Enterprise System  Persuade? The Role of  Perceived Effectiveness and  Social Influence | Lecture Notes in Computer Science | Dabi, J., **Wiafe, I**.,  Stibe, A., & Jamal Deen, A |
| *Conference Proceedings* | *2017* | Privacy-enhancing national identification card system | AFRICON IEEE | Kuada, E., **Wiafe, I**., Addo, D., & Djaba, E. |
| *Conference Proceedings* | *2016* | Assessing the Relationship between User Perception and  Use of ERPs in Higher  Education Institutions in  Ghana | Applied Informatics and  Technology Innovation  Conference | **Wiafe, I.**, Addo, D., Assyne, N. and Wiafe, A. |
| *Conference Proceedings* | *2015* | Enhancing Persuasive  Features of Behaviour Change  Support Systems: The Role of  U-FADE | International Workshop on  Behaviour Change Support  System | **Wiafe**.**, I.** and Frempong, D. A |

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| **PUBLICAT ION TYPE** | **Year** | **Title of Publication** | **Name of Journal /Publication Outlet** | **Authorship** |
| *Journal* | *2014* | Categorizing Users in  Behavior Change Support  Systems Based on Cognitive  Dissonance | Personal and Ubiquitous Computing | **Wiafe, I.**, Nakata, K., & Gulliver, S |
| *Journal* | *2014* | U-FADE: A Unified  Approach to Persuasive  Systems Development | International Journal of  Conceptual Structures and Smart Applications | **Wiafe, I.**, |
| *Book chapter* | *2014* | Healthcare Resource  Sustainability: Obtaining  Information Access via  Healthcare Space Modelling | Handbook of Research on  Patient Safety and Quality  Care through Health  Informatics | Gulliver, S. R., **Wiafe, I**., Grzybek, H., & Radosavljevic, M. |
| *Journal* | *2013* | Changing building user attitude and organisational policy towards sustainable resource use in healthcare | Health Policy and Technology | Gulliver, S., Grzybek, H., Radosavljevic, M., & **Wiafe, I.** |
| *Conference Proceedings* | *2013* | A Unified Framework for  Analysing, Designing and  Evaluating Persuasive  Technologies | EuroPLOT | **Wiafe, I.** |
| *Conference Proceedings* | *2013* | Culture, Cognition, and ECommerce Behaviour | Proceedings of ICISO 2013 | Alhammad, M.,  Gulliver, S., **Wiafe, I.,** and Nakata, K |
| *Conference Proceedings* | *2013* | Bibliographic Analysis of Persuasive Systems:  Techniques, Methods, and  Domains of Application | CEUR Proceedings | **Wiafe, I.,** and Nakata,  K |
| *Conference Proceedings* | *2012* | Analyzing the Persuasion  Context of the Persuasive Systems Design Model with the 3D-RAB Model | Lecture Notes in Computer Science | **Wiafe, I**., Alhammad, M. M., Nakata, K., Gulliver, S. R. |
| *Conference Proceedings* | *2011* | Designing Persuasive ThirdParty Applications for Social Networking Services Based on the 3D-RAB Model | Communications in  Computer and Information  Science | **Wiafe, I**., Nakata K., Gulliver, S. R. |
| *Conference Proceedings* | *2011* | Modelling Building  Semantics: Providing  Feedback and Sustainability | Proceedings of World  Renewable Energy Congress | Grzybek, H., Shah, H., **Wiafe, I.**, Gulliver, S., and Nakata, K. |
| *Conference Proceedings* | *2011* | Considering user attitude and behaviour in persuasive systems design: The 3D-RAB model | Proceedings of ECIS 2011 | **Wiafe, I.**, Nakata, K., Moran, S. and Gulliver, S. |
| *Conference Proceedings* | *2011* | Ubiquitous Monitoring as a  Tool for Changing Cognitive State | *IEEE/WIC/ACM* | Moran, S, **Wiafe, I.,** and Nakata, K |
| *Conference Proceedings* | *2010* | A Semiotic Analysis of  Persuasive Technology: An | Proceedings from ICISO 2010 | **Wiafe, I.** and Nakata, K. |
| **PUBLICAT ION TYPE** | **Year** | **Title of Publication** | **Name of Journal /Publication Outlet** | **Authorship** |
|  |  | Application to Obesity  Management |  |  |

## 27. OTHER ACADEMIC WORK/EXHIBITS/PATENTS/WORKS OF ART ETC

1. Wiafe I, Abdulai J-D, Atsakpo, E. D., Nutrokpor, C., Ekpezu A. O., Dodzi R. H., & Solaga, K. K., (2023) UGSpeechData:A dataset for neural machine translation in five Ghanaian languages project :

<https://github.com/HCI-LAB-UGSPEECHDATA/speech_data_ghana_ug>

1. Wiafe I, Abdulai J-D, Atsakpo, E. D., Nutrokpor, C., Ekpezu A. O., & Dodzi R. H., (2023) UGSpeechdata App: an android open source app for collecting audio responses

<https://drive.google.com/file/d/1E52m5ZAlELkosPKGarxYjXr2lc1YmONE/view?pli=1>

1. Wiafe I, Abdulai J-D, & Ekpezu A. O., & Solaga, K. K., (2024) Ghanaian keyboards for word processing in MS Windows and Mac OS v1 (Ewe and Ikposo keyboard): [https://github.com/HCI-LAB-](https://github.com/HCI-LAB-UGSPEECHDATA/SPEECH-DATA-KEYBOARDS)

[UGSPEECHDATA/SPEECH-DATA-KEYBOARDS](https://github.com/HCI-LAB-UGSPEECHDATA/SPEECH-DATA-KEYBOARDS)