ERCIM fellowship Programme
Final scientific report

Fellow	Eniafe Festus Ayetiran

Host Organisation	Norwegian University of Science and Technology (NTNU)

Scientific coordinator	Özlem Özgöbek

I – SCIENTIFIC ACTIVITY DURING YOUR FELLOWSHIP

During the fellowship, in collaboration with the scientific supervisor, I conducted research on multimodal fake news and harmful languages detection deep learning technique. Specifically, I developed a deep learning model based on inter-modal attention among three data modalities. This introduces a new innovation by considering images and image-texts along with the traditional text modality.

Furthermore, I wrote a review of state-of-the-art techniques on fake news and harmful languages detection. Apart from the main topic of the research fellowship, in collaboration with an external researcher, we completed and published a research work which was ongoing before the commencement of the fellowship. The area of research focuses on the application machine learning technique for detection of likelihood of civil unrest by analysing tweets.

Besides the core research activities, I co-supervised the master degree thesis of Øystein L. Nilsen on knowledge-aware multimodal fake news detection. I was also a co-organizer and participated on the first Workshop on Advances in Disinformation Detection (WADD 2023), co-hosted with 35th Norwegian ICT Conference for Research and Education. The event took place at the University of Stavanger.

II – PUBLICATION(S) DURING YOUR FELLOWSHIP

Refereed Journal Articles:

- Temidayo Michael Oladele & Eniafe Festus Ayetiran (2023). Social Unrest Prediction Through Sentiment Analysis on Twitter Using Support Vector Machine: Experimental Study on Nigeria's# EndSARS. Open Information Science, Volume 7 Issue 1, https://doi.org/10.1515/opis-2022-0141

Conference Proceedings:

- Øystein L. Nilsen, Pelin Mişe, Ahmet Yıldız, Eniafe Festus Ayetiran & Özlem Özgöbek (2023). I-KAHAN: Image-Enhanced Knowledge-Aware Hierarchical Attention Network for Multi-modal Fake News Detection. In *proceedings of 35th Norwegian ICT Conference for Research and Education (NIKT2023), University of Stavanger, Stavanger, Norway, 27th – 30th November, 2023.*

Manuscript Under review

- Eniafe Festus Ayetiran and Özlem Özgöbek. (2023). An Inter-Modal Attention-Based Deep Learning Framework Using Unified Modality for Multimodal Fake News, Hate Speech and Offensive Language Detection. Available at SSRN: https://ssrn.com/abstract=4504061 or http://dx.doi.org/10.2139/ssrn.4504061

- Eniafe Festus Ayetiran and Özlem Özgöbek. (2024). A Review of Deep Learning Techniques for Multimodal Fake News and Harmful Languages Detection. Available at SSRN: https://ssrn.com/abstract=4691091 or http://dx.doi.org/10.2139/ssrn.4691091

III – ATTENDED SEMINARS, WORKHOPS, CONFERENCES

- *35th Norwegian ICT Conference for Research and Education (NIKT2023), University of Stavanger, Stavanger, Norway, 27th – 30th November, 2023.*

- Workshop on Advances in Disinformation Detection (WADD 2023), co-hosted with 35th Norwegian ICT Conference for Research and Education (Co-Organizer), *University of Stavanger, Stavanger, Norway, 27th – 30th November, 2023*

IV – RESEARCH EXCHANGE PROGRAMME (REP)

For the research exchange programme, I visited High Performance Computing (HPC) group of SIMULA, Oslo for a week during which I started a research collaboration with my host (Johannes Langguth) on the application of machine learning to multilingual conspiracy theory. Part of the HPC group works on social and behavioural computing and applications.