

SUMMARY

I am a computer scientist and researcher with a strong background in machine learning, natural language processing (NLP), and large language models. My academic background and professional experience have enabled me to work on a range of projects, from building NLP systems to developing machine learning pipelines for real-world applications. I am excited by the rapid advancements in AI systems, but concerned about the risks they may pose. Therefore, I am dedicated to exploring AI safety, interpretability, and alignment in my future research to ensure that AI benefits all humanity.

EDUCATION

STELLENBOSCH UNIVERSITY MSc COMPUTER SCIENCE • Thesis: Hierarchical Text Classification with Transformer-based Language Models. Cum Laude (85%)	<i>Jan 2023 - March 2024</i>
STELLENBOSCH UNIVERSITY BSc (HONS) COMPUTER SCIENCE • Focus on machine learning with mini thesis in machine learning and natural language processing. Cum Laude (86%)	<i>Jan 2022 - Dec 2022</i>
STELLENBOSCH UNIVERSITY BCOM MATHEMATICAL SCIENCE (DATA SCIENCE) Cum Laude (87%)	<i>Jan 2019 - Dec 2021</i>

EXPERIENCE

MATOGEN APPLIED INSIGHTS DATA SCIENTIST. • Designed and implemented data pipelines to support machine learning workflows. • Developed machine learning models for predictive analytics, optimizing performance and scalability. • Built NLP solutions, including chatbots, tailored to meet specific client needs.	<i>May 2024 - Present</i>
STELLENBOSCH UNIVERSITY COMPUTER SCIENCE TEACHING ASSISTANT.	<i>2022</i>

SKILLS

PROGRAMMING LANGUAGES	Experienced: Python Familiar: C Java R Javascript SQL
SOFTWARE DEVELOPMENT	GIT Docker CLI Agile Methodology
FRAMEWORKS & LIBRARIES	PyTorch TensorFlow HuggingFace Pandas PySpark Scikit-learn
LANGUAGES	Fluent: English Afrikaans Beginner: Dutch German Spanish

PUBLICATIONS

- du Toit, J., Dunaiski, M. (2023). Hierarchical Text Classification Using Language Models with Global Label-Wise Attention Mechanisms. In: Artificial Intelligence Research. SACAIR 2023. Communications in Computer and Information Science, vol 1976. Springer, Cham. https://doi.org/10.1007/978-3-031-49002-6_18
- du Toit, J. and Dunaiski, M. (2024). Prompt Tuning Discriminative Language Models for Hierarchical Text Classification. Natural Language Processing. <https://doi.org/10.1017/nlp.2024.51>
- du Toit, J. (2024). Hierarchical Text Classification with Transformer-based Language Models. Stellenbosch University. <https://scholar.sun.ac.za/items/0eb2b468-ca45-402b-ab23-5632230fb8d3>

AWARDS AND HONOURS

STELLENBOSCH UNIVERSITY RECTOR'S AWARD FOR ACADEMIC EXCELLENCE.	<i>2022</i>
STELLENBOSCH UNIVERSITY FACULTY OF SCIENCE POSTGRADUATE RESEARCH CONFERENCE: BEST ORAL PRESENTATION.	<i>2023</i>