REA NKHUMISE

rmnkhumise1@sheffield.ac.uk
+44 7444 68 1570
LinkedIn Profile

EDUCATION

PhD Computer Science,
The University of Sheffield, Sheffield, UK
2022 - 2025

- Research focus: Reinforcement learning for human-robot shared autonomy in assistive robotics
- Recipient of EPSRC Doctoral Training Partnership Scholarship

MSc Engineering in Robotics
Tennessee Technological University, Cookeville, USA
2014 - 2016

- Relevant Coursework: Robotics System Design, Artificial Intelligence
- Research focus: Evaluation and control of mobile manipulators
- Recipient of Fulbright Scholarship

BSc Engineering in Mechanical Engineering
University of the Witwatersrand, Johannesburg
2010 - 2013

- Relevant Coursework: Computer Programming, Control Systems, Mechatronics
- Dissertation Title: Modelling, Identification & Feedback Linearization Control of a Multivariable Hydraulic Servo System
- Recipient of Dean's List Recognition

PERTINENT EXPERIENCE

Graduate Teaching Assistant,
Department of Computer Science, The University of Sheffield,
Jan 2022 - Current

- Assisted in teaching Machine Learning, Reinforcement Learning, and Cognitive Robotics to undergraduates
- Demonstrated communication and collaboration skills

Roboticist and Software Controls Engineer,
Offworld Inc,
Aug 2020 - Dec 2021

- Conducted experiments on teleoperated mobile manipulators for mining operations
- Recognized for problem-solving & teamwork

Robotics and Systems Engineer,
SARAO (formerly SKA),
Oct 2016 - Jan 2019

- Developed a robotic tape library systems for data storage
- Presented work at the 4th World Congress on Robotics & AI in Osaka, Japan
- Recognized as "Sharpest Young Systems Engineer" by INCOSE South Africa

Chief Technology Officer,
Planet Eye Pty Ltd,
Jun 2016 - Aug 2020

- Developed an autonomous cooking device for indigenous african food
- Filed a patent: ZA Patent 2021/07371

Research Assistant,
Department of Computational Intelligence, University of Johannesburg,
Feb - Jul 2014

- Researched AI algorithms and their application in Finite-Element Updating
- Assisted in compiling manuscript "Artificial Intelligence Techniques for Rational Decision Making"

SKILLS

- Programming: Python, MATLAB, C++, ROS, PyTorch
- Engineering: Autodesk Inventor, ANSYS FEA
- Technical: Embedded systems, rapid prototyping, web development
- Research: Experiment design, data analysis
- Collaboration: Interdisciplinary teamwork, effective communication
- Problem-solving: algorithm development, system optimization
- Project Management: Planning, systems engineering and management
- Business Development: Market research, Fundraising

ACADEMIC ACHIEVEMENT

- Co-authored paper titled “Measuring Exploration in RL via Optimal Transport in Policy Space”, currently under review (2024).
- Serving as Ph.D. Representative, Sheffield Robotics 2023 - 2025
- Member of the Organising committee for 7th Annual IEEE UK and Ireland Robotics and Automation Society Chapter Conference, 2024
- Chaired entrepreneurship session at 7th IEEE UK & Ireland Robotics Conference, bridging academia with practical applications
- Poster presentation on *Task Complexity in RL* at Int’l Robotics Showcase 2023
- Presented on *low-cost robotic tape library systems using open-source tech* at AfricaOSH Summit for Open Science & Hardware, Kumasi Ghana, 2018
- Presented on *alleviating malnutrition in impoverished communities using system engineering approach* at 13th Annual International Council on Systems Engineering South Africa Conference 2017
- Panel member, Science Forum South Africa - 2016: Discussed practical engagement in the knowledge economy.

PROFESSIONAL DEVELOPMENT

- Attended the First Workshop on Multimodal AI at The University of Sheffield, June 2023
- Participated in ICRA2023 workshop: 'Effective Representations, Abstractions, and Priors for Robot Learning'
- Represented the University of Sheffield at ICRA2023, promoting institute research and fostering collaborations
- Participated in the Sheffield Robotics showcase 2022 and 2023
- Completed DeepMind's Reinforcement Learning course by David Silver, 2022
- Completed Coursera project on Image Compression and Generation using Variational Autoencoders in Python, 2022
- Participation in the Fulbright Enrichment Seminar on Entrepreneurship & Technological Innovation in Pittsburgh, U.S. in 2015

EXTRACURRICULAR ACTIVITIES

- Active participant in TalkingRobotics and BlackInRobotics
- Engaged member of Sheffield's startup ecosystem, exploring the synergy between robotics and entrepreneurship
- Co-authored paper on "Big Data Analytics: Supporting Small Businesses," IJMCI, 2018

REFERENCES

- Available upon request