

Shivaanee Eswaran

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EDUCATION

- **Indian Institute of Technology Madras** Zanzibar, Tanzania
Master of Technology - Data Science and Artificial Intelligence; GPA: (ongoing) Oct 2024 - June 2026
Courses: Mathematical Foundations of Data Science, Programming & Data Structures, Data Analytics, NLP, Deep Learning
- **Heriot-Watt University** Edinburgh, UK
Bachelor of Science (Hons) - Computer Science; Rank: Upper Second Class Sep 2021 - June 2024
Courses: Data Mining and Machine Learning, Conversational Agents and Spoken Language Processing, Data Visualisation and Analytics, Statistical Modelling and Analysis, AI and Intelligent Agents, Intelligent Robotics, Data Structures and Algorithms
Dissertation: Comparison of Recommendation Algorithms through development of a Book Recommender Web App using NLP and Machine Learning
- **Gems Modern Academy** Dubai, UAE
High School Diploma (ISC Curriculum); Score: 95% March 2021
Courses: Mathematics, Computer Science, Physics, Chemistry, English

EXPERIENCE

- **Walmart Center for Tech Excellence** Remote
Research Assistant Nov 2024 - present
 - **Inventory Management Optimisation:** Developing an AI-based optimisation framework integrating neural ODEs and Pontryagin's principles to minimize inventory management costs.
 - **ANNs:** Artificial Neural Network (ANN) based decision support system and inventory management
 - **Machine Learning & Statistical Modelling:** Using Python and R to build models and analyze data effectively.
- **Flydubai** Dubai
IT Corporate & Support Intern Sep 2024 - Oct 2024
 - **Asset Reconciliation:** Managed a backlog of over 500 tickets, documenting ticket details and any discrepancies.
 - **Automation of Reconciliation Process:** Proposed automation for repetitive and manual processes. Successfully completed the data extraction component, and redesigned data forms for cleaner data in future.
 - **Data Visualisation:** Created visualisations in Power BI to communicate asset use.
 - **Impact:** Enhanced the efficiency of asset tracking, and set a departmental record by imaging 31 laptops in a day.
- **Heriot-Watt University** Edinburgh
Lab Assistant Sep 2022 - Apr 2024
 - **Java, Python, SQL, HTML, CSS:** Supported software development and web design & databases courses.
 - **Student Engagement:** Helped over 100 students understand course material, marked assignments, provided feedback, and contributed to assessment strategy discussions.

RESEARCH & PROJECTS

- **AI Mathematical Olympiad (Python, LLMs (Qwen, DeepSeek, Phi), Prompt Engg.):** Developing an AI model for solving complex International Math Olympiad (IMO) problems requiring step-by-step reasoning and deep understanding of mathematical concepts.
- **Predicting Metabolite Concentrations from NIR Spectral Data (Python, R, Machine Learning):** Near-infrared (NIR) spectroscopy is a non-destructive and non-invasive analytical technique. Used NIR spectral data to predict metabolite concentrations with models such as Ridge and PLS regression, Elastic Net, LASSO, and neural networks and identified significant spectral features. Incorporated labeled and unlabeled data using self-training, pseudo-labeling, and autoencoders.
- **Impact of Narratives on Human-Robot Interaction (NLP, GPT-3.5, Python, R, Kotlin):** Led an 8-member team in a research study on the impact of narratives on human-robot interactions using a Furhat robot with an OpenAI LLM - GPT-3.5, conducting data analysis in Python and R, implementing the desired robot behavior in Kotlin, and building the virtual environment in Minecraft; the project was recognized for submission to the HAI conference, reflecting its significant contributions to the field.
- **Song popularity predictor (Machine Learning, TensorFlow, Keras, PyTorch, Pandas, Python):** Led a 5-person team on a Machine Learning project to develop a predictive model for song popularity using Spotify data, achieving 85% accuracy with Neural Networks while cleaning and preparing a dataset of over 10,000 songs; implemented K-Nearest Neighbors and Decision Trees, optimizing performance and increasing predictive accuracy by 15%
- **COVID-19 Vaccination Effectiveness Visualization (D3.js, Javascript, HTML, CSS):** Led a data visualization project on a COVID-19 vaccination dataset, ensuring data accuracy for over 50,000 records using Pandas and NumPy, and developed an interactive dashboard with diverse visualizations using HTML, CSS, JavaScript, and D3.

HONORS AND AWARDS

- Research Poster Paper Published in Human-Agent Interaction (HAI) Conference - November, 2024
- Recipient of 50% Merit Scholarship (Undergrad) - September, 2021
- 3x Champion at IPA National Abacus Competition - 2015, 2016, 2017