Nikolai Tennant

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WORK EXPERIENCE

dunnhumby, London, England
Research Engineer, Customer Decision Sciences March 2025 – Present
- Designed and implemented a LLM-powered text generation system
- Developed science modules for cost modelling, impact prediction, and dynamic product ranking

Associate Research Engineer, Customer Decision Sciences September 2023 – March 2025
- Optimised Tesco Mobile's handset assortment using ML and autoencoders on 5M customer dataset
- Led customer profiling projects delivering £829,000 in business value
- Refactored codebases, implemented testing, and removed external API dependencies

Integration Initiative: Sex, Aging, Genomics, and Evolution (IISAGE) & Singh Lab, Brown University, Remote
Research Assistant May 2023 – Present
- Conducting X chromosome dosage compensation research as part of NSF-funded initiative
- Developing computational models for cross-species ageing biomarker analysis
- Contributing to multi-institutional collaboration across 11 research laboratories

EDUCATION

Brown University, Providence, RI
MSc Data Science, GPA 4.0/4.0 September 2022 - October 2023
BA Degree in History and Minor in Data Science, GPA 3.6/4.0 September 2018 - May 2022

- Relevant Coursework: Machine Learning, Deep Learning, Statistical Learning, Computational Probability and Statistics, Data Engineering, Applied Statistics in Python, Data Science Fluency, Hands-on Data Science, Data, Ethics and Society
- Relevant Co-curricular: Research Assistant for course *Machine Learning for the Earth & Environment*, Data Science Club Team Lead, Data Science Fellow

PUBLICATIONS

Tennant, N.*, Pavuluri, A., O'Connor-Giles, K., Larschan, E.†, & Singh, R.†. TimeFlies: An snRNA-seq aging clock for the fruit fly head sheds light on sex-biased aging. Manuscript accepted. Nature Scientific Reports – Aging Clocks Collection. Manuscript accepted, undergoing final review. [Preprint]

- Developed 1D CNN achieving 95% accuracy and 0.99 AUC on Drosophila ageing prediction
- Model generalises across all cell types while capturing cell-type-specific signals
- Identified ageing marker genes and sex-biased ageing mechanisms with in vivo validation

†Co-corresponding authors

ADDITIONAL PROJECTS

RAG Scholar - Professional Research Assistant [Demo] 2025
- Built full-stack RAG system with Python/FastAPI backend and React/TypeScript frontend
- Implemented hybrid search (FAISS vector + BM25 keyword) with OpenAI embeddings and LangChain
- Deployed on Google Cloud Platform with CI/CD pipeline, handling multi-format document processing
- Features: session memory, citation tracking, domain-specific responses, real-time chat interface

SenID - Cellular Senescence Identification [Repository] January 2023 – May 2023
- Designed a novel deep learning CNN-based methodology using nuclear morphology to identify cellular senescence
- Cultivated 40,000 human and mouse senescent/cycling cells for analysis, expanding beyond previous human-only studies
- Achieved 0.96 AUC using 1/100th the training samples of previous studies
- 2nd place finish in 225+ participant hackathon

Premier League Result Forecasting [Repository] September 2022 – December 2022
Built ML pipeline achieving 20% greater accuracy than baseline for match outcome prediction

TECHNICAL SKILS

Programming: Python, SQL, R, JavaScript, TypeScript, Git, Bash
ML/AI: PyTorch, TensorFlow, LangChain, OpenAI API, FAISS, Vector Databases, NLP
Data & Cloud: PySpark, Pandas, NumPy, AWS, Databricks, Docker, Google Cloud Platform
Specialties: Computational Biology, Genomics, RAG Systems and LLMs

*Authorised to work for any US or UK employer (Dual Citizen)