

PROJECT DETAILS

Project Title:

Multimodality AI-based Explainable Fall Risk Prediction in Community Home Care.

Project Summary:

The proposed PhD research explores how community home care providers can better integrate multimodal operational data and explainable artificial intelligence (AI) to enable proactive fall risk prediction. Although fall prevention guidelines emphasise systematic documentation and monitoring, current predictive approaches remain fragmented and underutilise unstructured progress notes. This research will develop a unified multimodal framework that integrates structured assessments, longitudinal visit records, and natural language representations of care notes. By combining multi-horizon survival modelling with explainable machine learning techniques such as SHapley Additive exPlanations (SHAP), the study will generate transparent, actionable risk indicators. The project aims to deliver both methodological innovation and an industry-ready decision-support framework aligned with aged care governance and safety standards.

Preferred Applicant Skillset:

- First-Class Honours or Master's degree in Data Science, Computer Science, AI, Statistics, or related field.
- Strong Python programming (e.g., PyTorch/TensorFlow, scikit-learn).
- Experience with NLP, multimodal modelling, or explainable AI.
- Demonstrated academic writing and publication potential.
- Excellent communication skills and ability to collaborate with industry partners.
- Self-motivated, independent, and capable of conducting rigorous research.

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