**Project Title: NeuroMorpheus: An Embodied Neuromorphic AI Agent for Personalized Monitoring and Support**

Many Canadians, including seniors and those with persistent health needs, want to live safely and independently while maintaining their fundamental well-being in their own homes. However, they face daily risks like falls or undetected and persistent health issues, which can reduce independence and increase the frequency and duration of hospital visits. While new AI technologies can help, current systems usually create significant privacy and security concerns due to their reliance on sending personal data to cloud servers. For example, every question you ask ChatGPT, or image you ask it to generate, is logged somewhere on OpenAI's servers. These technologies are also not equitably distributed, as communities in remote locations will have difficulty accessing cloud-based AI solutions running on remote server farms. This gap in effective and private monitoring also places considerable stress on family caregivers. Moving AI processing to local, or "edge" devices is a potential solution for a private AI-based support system that is entirely local and offline.

We propose to develop NeuroMorpheus: a private, personalized intelligent agent that operates entirely on edge devices locally in your own home to provide continuous safety monitoring and support. The core innovation is its use of neuromorphic computing, which mimics the brain's efficiency to overcome the power and performance challenges of edge-based AI. The system combines a low-power wearable for sensing with an edge AI agent based on small language models (SLMs) for interaction and decision-making, creating a truly proactive and private, omnipresent assistant.

Technologically, this research will pioneer new developments in low-power edge AI by applying neuromorphic computing to the monitoring of complex health and vital statistics. Societally, NeuroMorpheus is expected to improve the quality of life of Canadians by helping individuals live more safely and independently, which in turn will help reduce hospital stays and lessen the burden on caregivers.