

Master Thesis Offer

Event-driven, Multi-Agent Vision Assistance for Blind People

Background and Motivation

Current vision-based systems for blind individuals rely on user requests (e.g. "What is in front of me?") or are limited to very specific unpersonalized functions (e.g. translating text to speech). In **Healthcare 5.0**, assistive systems evolve from reactive tools to **smart proactive personalized solutions** that adapt to the user, their daily routines and preferred way of interaction.

Research Goal

This thesis explores **event-driven, edge native multi-agent systems** to predict user intent, detect hazards, and intervene autonomously –like ABS in vehicles. Agentic AI is moving forward towards solve latency with recent frameworks. De-centralizing the learning AI into smaller, asynchronous agents allows fast perception models to filter data before heavy reasoning models like Vision Language models (VLMs) process it. The developed system is integrated in a software framework that uses for demonstration purpose a VR headset as human/environment machine interface.

Methodology

- Identify use cases for home/street environments (e.g. walking in a street, buying grocery, searching for locations)
- Extension of human machine interface for new use cases
- Create and extend a dataset for this specific application
- Design system architecture using a sensor network, data fusion, and specialized AI agents for perception, reasoning, intervention
- Implement a prototype using embedded intelligence
- Evaluate accuracy, reliability, response time, and user feedback with the domain specific dataset

Available for Bachelor/Master thesis/Master APR



Interested? Just contact:
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