SILO AI

Adaptive Generative Agents in Dynamic Environments

Join us at Silo AI and SiloGen to be at the forefront of AI innovation and European digital sovereignty.

About Silo AI

Silo AI is Europe's largest private AI lab. We partner with industry leaders to build smart devices, autonomous vehicles, Industry 4.0, and smart cities. Silo AI recently launched SiloGen, which is now part of a groundbreaking consortium aimed at building the world's largest open-source Large Language Model. With SiloGen, our specialized arm in generative AI, we are redefining the future of AI and ensuring European digital sovereignty.

We offer an unparalleled opportunity to work on cutting-edge generative AI research projects. You'll be part of a world-class team, working on applied research that pushes the boundaries of Generative and Multimodal AI.

The Project: Adaptive Generative Agents in Dynamic Environments

In a data-rich world, AI models often encounter unexpected or unusual peripheral perceptual events. These moments are not anomalies but opportunities for learning and adaptation. This project aims to develop generative AI agents that can detect these "anomalies," contextualize them, learn from them, and adapt in real-time. The focus will be on:

1. **Anomaly Detection Mechanisms**: To identify unusual or unexpected events.
2. **Contextual Awareness**: To understand what experiences are already encoded and what new information could be beneficial.
3. **Dynamic World Knowledge**: Whether it's a persistent knowledge graph or a real-time contextual model, this feature will enable the agent to adapt and learn continually.

Goals

- Conduct a rigorous literature review focusing on Generative AI agents, continual learning settings, and Domain Adaptation techniques.
- Identify cutting-edge research gaps, especially those related to real-time adaptive capabilities of deployed generative AI agents.
- Design, develop, and benchmark your methodologies using our state-of-the-art computational resources.
- Engage in collaborative brainstorming sessions with our tech teams to refine and integrate your findings.
- Strive to publish your groundbreaking research in esteemed AI conferences.

Relevant Material

- [Voyager: An Open-Ended Embodied Agent with Large Language Models] (https://voyager.minedojo.org/)
- [To Adapt or Not to Adapt? Real-Time Adaptation for Semantic Segmentation] (https://arxiv.org/abs/2307.15063)
- [Online Domain Adaptation for Semantic Segmentation in Ever-Changing Conditions] (https://arxiv.org/abs/2207.10667)
- [Qwen-VL: A Frontier Large Vision-Language Model with Versatile Abilities] (https://arxiv.org/abs/2308.12966v1)

Next Steps

This project requires a high level of expertise in Deep Learning, along with strong mathematical and coding skills, similar to what you'd acquire in the ML or SCR programs at KTH. Previous experience in Domain Adaptation, Generative, and Multimodal AI will be a strong plus. Given the project's ambitious goals, be prepared for a commitment that may exceed the usual scope of MSc thesis projects.

To apply, submit the following in English to Pier Luigi Dovesi (pierluigi.dovesi@silo.ai):
- CV
- Cover letter
- Transcripts (with grades)