Stanford

Mouhssine Rifaki

Graduate Visiting Researcher Student, Electrical Engineering

Bio

BIO

Mouhssine Rifaki is graduate visiting research student in Electrical Engineering at Stanford University. As part of his position at the Arbabian Lab working with Amin Arbabian, he focuses on developing state-of-the art algorithms that enable adaptive sensing and inference within Physical AI systems. Mouhssine obtained his Master's degree in Mathematics, Vision, and Learning (MVA) from École Nationale Supérieure Paris-Saclay (ENS Paris-Saclay), as well as his Bachelor's in Mathematics from Sorbonne University.

EDUCATION AND CERTIFICATIONS

- PhD, Imperial College London , Electrical and Electronic Engineering - 2029 (Expected)
- MS, ENS Paris-Saclay , Applied Mathematics (MVA) (2026)
- BS, Sorbonne University , Mathematics (2023)

LINKS

- Stanford School of Engineering page: https://web.stanford.edu/~mrifaki/
- Google Scholar: https://scholar.google.com/citations?user=1lGBfd0AAAAJ&hl=en
- Personal website: https://rifaki.me

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

My current research utilizes RL in order to train embodied agents whose perception and foveation adapt while being deployed. I have made the claim that all of an agent's perception, decision-making, and physical actions should be designed simultaneously, as opposed to sequentially. The signal that connects each of the aforementioned components is prediction errors derived from a learned forward model.

In my work, I examine how adaptive sensor systems dynamically transition among different modalities based upon failures within a lightweight world model predicting what will be observed in the near-term future. I also explore foveated perception that devotes its high-resolution attention resources to those regions of space most likely to yield returns under conditions of distribution shift. Lastly, I investigate the design of real-time closed-loop control policies that utilize their dynamic sensing capabilities as input sources for their subsequent actions taken via the same senses.

PROJECTS

- Adaptive Sensing for Physical AI - Stanford University (4/1/2026 - present)
- Partner UED for Cooperative Multi-Agent Learning - New York University (3/1/2026 - 9/30/2026)