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Objective

Advancing technology and conducting cutting-edge research in world models, representation learning, causality, and generalization to develop innovative solutions for real-world applications in life sciences and embodied AI, given their complexity and societal impact. I am also committed to democratizing AI systems, enabling personalization, and opening doors to diverse applications to reap the full spectrum of benefits all while remaining in line with environmental and ethical considerations.

Education

ELLIS / Albert-Ludwigs-Universität Freiburg

PhD in Machine Learning 2024 - Present

- Research focused on foundation models for decision making, world models and representation learning.

Albert-Ludwigs-Universität Freiburg

MSc. in Artificial Intelligence and Robotics Freiburg, Germany
2021 - 2024

- GPA, 1.1/1.0
- **Thesis:** Diffusion Models for RNA Tertiary Structure Generation

Ain Shams University, Faculty of Engineering

BSc. in Mechatronics Engineering and Automation Cairo, Egypt
2014 - 2019

- GPA, 3.75/4.0 with highest honors, Ranked 4th, top 5% in class of 120.

Experience

Research Assistant

Machine Learning Lab, University of Freiburg Freiburg, Germany
Mar 2022 - Jun 2024

- Benchmarking and developing generative algorithms for RNA
- Zero-shot generalization for model-based reinforcement learning
- Latent diffusion counterfactual explanations.

Data Scientist

Halan Cairo, Egypt
Nov 2020 - Sep 2021

- Design and development of the MLOps pipeline
- Dynamic incentives, provision improvement and loan default prediction
- Spatio-temporal forecasting demand and supply prediction for the ride hailing service.

Research Assistant

Computer Science Department, American University in Cairo Cairo, Egypt
Jun 2020 - Oct 2021

- Mixed Criticality non-Preemptive Task Scheduling using Reinforcement learning.

- Dynamics Embedding for Zero and Few shot system identification.

Data Scientist

Raisa Energy

Enhancing the owning and leasing process by

- policy evaluation of the operators
- pad detection using deep learning segmentation techniques on satellite images.

Cairo, Egypt

Jul 2019 - Jun 2020

Teaching and Research Assistant

Engineering Faculty, Ain Shams University

Cairo, Egypt

Sep 2019 - Aug 2020

- Teaching assistant for computer vision and computational intelligence courses
- Technical Lead for FSUK-AI team, research in 3D object detection, generalized predictive modelling, and optimal control with real-time demands.

Skills

1. Computer Vision and Robotics
 - Navigation and planning through optimal control and deep reinforcement learning (model-based/model-free) algorithms
 - Using Python, Pytorch, Keras, Tensorflow, OpenAI Gym, RLib, Ray, Singularity, and ROS.
2. MLOps, Machine learning, Data Analysis, and Optimization using SQL, Pytorch, TF, Pytorch Lightning, Pandas, and sklearn with experience in cloud platforms GCP and AWS and HPC with Slurm and Torque.
3. Language: Arabic, Mother tongue; English, Proficient IELTS 8; French and German, Basic.

Awards and Competitions

Wolfgang-Gentner Young Scientist Award	2024
ELIZA (ELLIS) MSc Scholarship	2022
Formula Student Artificial Intelligence 2 th	2020
IndabaX Egypt Conference Poster Competition 2 th	2019

Publications

- Prasanna, S., Farid, K., Rajan, R., & Biedenkapp, A. (2024). Dreaming of Many Worlds: Learning Contextual World Models Aids Zero-Shot Generalization. In RLC.
- Farid, K., Schrodi, S., Argus, M., & Brox, T. (2024). Latent Diffusion Counterfactual Explanations. International Conference on Learning Representations. In GCPR
- Farid, K., & Sakr, N. (2021). Few-Shot System Identification for Reinforcement Learning. In ACIRS.
- Sakr, N., Farid, K., & Hussein, Y. (2021). Dual-criticality scheduling on non-preemptive, dynamic processors using RL agents. In IWDSP.