Shyma Alhuwaider

PhD Candidate in Computer Science | AI and Computer Vision Researcher

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Education

King Abdullah University of Science and Technology (KAUST) — *Thuwal, SA*
PhD in Computer Science | **Thesis:** Test-Time Adaptation Techniques for Robust and Scalable Machine Learning Systems | **Advisor:** Bernard Ghanem — 2022 - Ongoing

King Abdullah University of Science and Technology (KAUST) — *Thuwal, SA*
Master's in Computational Science | **Thesis:** Physics-Informed Neural Networks for Computational Fluid Dynamics | **Advisor:** Matteo Parsani — 2019 - 2022

Prince Mohammed Bin Fahd University (PMU) — *Khobar, SA*
Bachelor's Degree: Double Major in Computer Science & Computer Engineering — 2015 - 2019

Selected Publications

[1] **Shyma Alhuwaider**, Motasem Alfarra, Juan C. Pérez, et al. "Towards Realistic Test-Time Adaptation: a Tracklet-based Benchmark," 2024. [under review]

[2] Alfarra, M., Itani, H., Pardo, A., **Alhuwaider, S.Y.**, et al. (2024). "Evaluation of Test-Time Adaptation Under Computational Time Constraints." *Proceedings of the 41st International Conference on Machine Learning (ICML)*, in *Proceedings of Machine Learning Research* 235:976-991 [Link]

[3] Mohamed, Y., Abdelfattah, M., **Alhuwaider, S.** et al. "ArtELingo: A Million Emotion Annotations of WikiArt with Emphasis on Diversity over Language and Culture," *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 8770–8785, 2022. [Link]

Research Projects

Research on Test Time Adaptation Datasets and Setups — *KAUST*
Tracklet Based Dataset and Benchmark for Test Time Adaptation — 2023 - Ongoing

- Designed a novel dataset and benchmark framework to evaluate test-time adaptation methods in realistic scenarios, incorporating a tracklet-based approach to simulate domain shifts and environmental changes in video sequences.
- Evaluated state-of-the-art adaptation algorithms using tailored metrics to measure robustness under evolving and time-dependent corruptions.
- Applied frequency domain analysis to enhance image quality under corrupted conditions, improving adaptability in real-world computer vision tasks.

Research on Physics-Informed Neural Networks for Fluid Flow Prediction — *KAUST*
PINNS & Inverse Design — 2021 - 2022

- Developed an inverse design framework using PINNs for aerodynamic shape optimization, achieving efficient fluid flow predictions.

Work Experience

KAUST
Teaching Assistant for *Deep Learning for Visual Computing* course — 2025 - Ongoing

Assisting in evaluating graduate-level coursework as well as providing technical guidance on deep learning applications in computer vision.

Dell Technologies
Machine Learning Pre-sales Specialist — 2022 - 2022

Proposed scalable AI/ML pipelines for clients, including deep learning model optimizations.

Super Artistic AI SAAI Factory
Tutor & Organiser — 2021 & 2023

Organized a local hackathon, leading workshops on generative adversarial networks (GANs). Demonstrated Music Creative GAN, highlighting its potential in art and creativity.

Institute of Electrical and Electronic Engineering (IEEE) Chapter
Committee Coordinator — 2019

Documented the status of university student chapters across Saudi Arabia. Planned Student and Young Professional Congress (SYP).

Procter & Gamble
Data Analytics Intern — 2018

Validated image recognition technology and enhanced photo quality. Resolved database gaps. Tested the image recognition application.

Awards and Honors

Scholarship — *Tenaris*
The first recipient of the Roberto Rocca Education Program scholarship in the Middle East. — 2018 - 2019

Contest — *Space Apps Saudi*
Earned first place in NASA Space Apps Challenge for proposing a computer vision solution to detect defects in space shuttles. — 2018

Technical Skills

Programming Python, C/C++, Java, JavaScript, MATLAB, Prolog, SQL

Tools and libraries Git, Jupyter, PyTorch, TensorFlow, NumPy, Pandas, scikit-learn, Google Colab, AWS, xgboost, PowerBi

Reviewer CVPR