Arash Rocky

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Objective

Dedicated and highly skilled PhD Candidate specializing in Computer Vision for Autonomous Vehicles and Advanced Driving Assistance Systems (ADAS). Seeking to leverage research experience and technical expertise in a challenging role within an innovative organization.

Education

PhD Candidate in Electrical and Computer Engineering
University of Windsor, Canada
2021 - Present
MASc in Electrical Engineering, Electronics
Shahid Chamran University of Ahvaz
2010 - 2013
Thesis: *Image Enhancement Using Super-Resolution* (Outstanding Final Thesis)
BEng in Electrical Engineering, Electronics
Shahid Chamran University of Ahvaz
2004 - 2009
Thesis: *Evaluation of EEG signals using Artificial Neural Networks* (Outstanding Thesis)

Skills

- **Programming:** Python, C++
- **Tools/Software:** PyTorch, Keras, TensorFlow, OpenCV, NumPy, Pandas, Scikit-learn, CUDA, MATLAB
- **Research Areas:** Artificial Intelligence, Machine Learning, Deep Learning, Computer Vision, Image Processing, Multiple Object Tracking, Video Instance Segmentation, Vision-Language Model (VLM), Accident Detection and Anticipation, EEG Signal Processing

Research Experience

Research Assistant
September 2021 - Present
Department of Electrical and Computer Engineering, University of Windsor, Canada

- Pursuing research on Traffic Accident Detection Using Dashcam Videos with deep learning approaches.
- Utilizing object detection, object tracking, instance segmentation and VLMs for accident detection.

Graduate Assistant
September 2021 - May 2025
Department of Electrical and Computer Engineering, University of Windsor, Canada

- Conducted laboratory sessions and tutorials.
- Prepared teaching materials, assignments, lectures, and marked assignments, projects, and exams.
- Courses: Image Processing, Digital Logic Design, Capstone Projects, Computer System Architecture

Teaching Experience

Lecturer *July 2012 - June 2013*
Department of Electrical and Computer Engineering, Karoon Institute of Higher Education, Ahvaz, Iran

- Courses: Electrical Circuits I, Electronics I, Logic Circuits

Guest Lecturer *2011*
Department of Electrical Engineering, Shahid Chamran University, Ahvaz, Iran

- Topic: What Is Super-Resolution?

Guest Lecturer *2010*
Department of Electrical Engineering, Shahid Chamran University, Ahvaz, Iran

- Topic: Introduction to 4th Generation Mobile Networks

Research Topics

- **Traffic Accident Detection Using Dashcam Videos:** Developing new baseline for accident detection using object detection, tracking, instance segmentation, and depth map (Published one journal).
- **Emotion Assessment Using EEG Signal Classification:** Using synthetic statistical-frequency feature extraction and feature selection for neural network signal classification (Published one journal).
- **Image Enhancement Using Super-Resolution:** Implemented a super-resolution model, Generalized Non-Local Means, by fusion of denoising, deblurring, and upscaling (Published one paper).

Publications

1. **Rocky A.**, Wu Q.M.J., "SAM2Auto: Auto Annotation Using FLASH", *arXiv preprint arXiv:2506.07850*, 2025
2. **Rocky A.**, Wu Q.M.J., Zhang W., "Review of Accident Detection Methods Using Dashcam Videos for Autonomous Driving Vehicles", *IEEE Transactions on Intelligent Transportation Systems*, 2024
3. Saba V., **Rocky A.**, "A real-time electroencephalography classification in emotion assessment based on synthetic statistical-frequency feature extraction and feature selection", *Annals of Military and Health Sciences Research*, 2016
4. **Rocky A.**, Ansari-Asl K., Akbarizadeh G., "The study on Super-Resolution Algorithm with Implicit Motion Estimation", *Iranian Conference on Intelligent Systems*, 2013
5. Amin R., Marashi SMH., Noori SMR., et al., "Medical, pharmaceutical, and nutritional applications of 3D-printing technology in diabetes", *Elsevier*, 2024

Honors

- Research Assistantship Award, University of Windsor, Canada, 2021 - Present

Professional Services

- Reviewer for IEEE Transactions on Cybernetics, 2019 - Present
- Reviewer for IEEE Transactions on Circuits and Systems for Video Technology, 2018 - Present