

ZOHREH AZIZI

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QUALIFICATION SUMMARY

- **Research** focused on low-cost machine learning solutions for Image Generation, Attribute-Guided Image Generation, Image Inpainting, Super Resolution, High-Resolution Image Generation, Image Deblurring, Image Denoising, Low-Light Image/Video Enhancement.
- **Experience** with GANs, StyleGAN2, Co-Mod-GAN, Deep Learning, Principle Component Analysis, SVD Decomposition, Regression, Retinex Decomposition, Gaussian Mixture Models, 3D Point Cloud, RANSAC, Connected Component Labeling, Locally Linear Embedding, Orthogonal Matching Pursuit, Wiener Filter, Image Segmentation, Object Detection, Classification Algorithms, VAEs, Low-rank Tucker Decomposition, Pruning Neural Networks, ONNX, OpenVino, TensorRT, CoreML.
- **Languages:** Python, Matlab, C, C++, C#, Java. **Machine Learning:** Pytorch, Tensorflow, Keras, OpenCV, Catalyst.
- **Teaching** experience in 17 grad and undergrad classes with up to 70 students in various topics; Digital Image Processing, Internet & Cloud Computing, Calculus, Electronics, etc., since 2015.

EXPERIENCE

Machine Learning Intern Adobe Sensei

Seattle, WA.

May. 2022 - Aug. 2022

- Developed a model optimization framework based on Tensor/Tucker decomposition, channel pruning and model conversion techniques which compressed Guided Co-Mod-GAN for face anonymization by more than 70% for cloud deployment. Reduced the inference time (latency) by two times on GPU and four times on CPU for both cloud and on-device deployment. Maintained the visual quality and FID score in the generated outputs of the optimized model. The Optimized Guided Co-Mod-GAN that I developed in 12 weeks has shown great potential to be utilized in several features of Adobe CCX.

Graduate Research Assistant Media Communications Lab (MCL) at USC

Los Angeles, CA

Aug. 2018 - present

- **Low-Light Image Enhancement**, Developed a low-complexity and explainable solution for low-light enhancement, in my 1st 6 mos at MCL. Our new method is the first to balance noise removal and natural texture preservation (*IEEE VCIP 2020*).
- **Progressive Attribute-Guided Extendable Robust Image Generation**, Developed an image generative model which has advantages in mathematical transparency, progressive content generation, fast training, robust performance with fewer training samples, and extendibility to attribute-guided image generation, super-resolution and high-resolution image generation (*under review in APSIPA TSIP 2022*).

Computer Vision & Perception Engineer — Intern B GARAGE AI

San Jose, CA.

May. 2021 - Aug. 2021

- Developed a 3D scene understanding framework using 3D semantic segmentation of RGBD images captured by flying drone, capable of empty pallet detection, full pallet detection, and box counting in warehouse, during the 1st 5 weeks.
- Developed a high resolution barcode detection framework for images captured by flying drone in compromising environment, affected by severe blur and noise, with recall more than 90%. Gained experience in barcode and image deblurring.

Undergraduate Research Assistant Sharif University of Technology

Tehran, Iran

Jun. 2016 - May 2018

- **B.Sc. Thesis: Ultra-Low Power Wearable System for Remote ECG Monitoring**, Designed smart phone application, database, and user interface for low-power remote ECG monitoring. The system collects ECG sensor data and transfers it to the user's smartphone. The ECG data is then uploaded to a cloud server for long-term monitoring. (paper under review)
- **ECG Data Compression**, Implemented a novel non-uniform sampling method for ECG data compression.

EDUCATION

Ph.D. in Electrical and Computer Engineering

2018 - Present

University of Southern California, Los Angeles, CA. GPA : 3.8/4.

MS. in Computer Science

2021 - 2022

University of Southern California, Los Angeles, CA. GPA : 3.8/4.

B.Sc. in Electrical Engineering, minored in Economics

2013 - 2018

Sharif University of Technology, Tehran, Iran. GPA: 17.6/20.

PUBLICATIONS

- **Z. Azizi**, C. Jay Kuo, "PAGER: Progressive Attribute-Guided Extendable Robust Image Generation", *APSIPA TSIP*, 2022.
- **Z. Azizi**, X. Lei, C. Jay Kuo, "Noise-Aware Texture-Preserving Low-Light Enhancement", *IEEE VCIP*, 2020.
- M. Rouh, M. Monajati, **Z. Azizi**, C. Jay Kuo, "Successive Subspace Learning: An Overview" *SoCal ML & NLP*, 2021.
- H, T, R, **Azizi**, et. al, "Self-aware Data Processing in Resource-Constrained IoT Systems", *IEEE Sensors Journal*, 2021.
- H, T, R, **Azizi**, et. al, "Ultra Low-Power System for Remote ECG Monitoring", *IEEE ICBME*, 2021.

AWARDS

- Grace Hopper Celebration Student Scholarship to attend GHC2021.
- PhD Scholarship Admission from *University of Toronto, Georgia Institute of Technology, University of Michigan*, in 2018.
- Ranked 3rd in Class of 2018, Sharif University of Technology.
- Ranked 97th in Iran's university entrance exam in engineering, and 35th in English language, among 150'000 students, in 2013.
- Ranked 4th in Iran's national bicycle riding competition, among 5'000 participants, in 2006.