Mahdi Naseri

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EDUCATION

- **PhD, University of Waterloo, Electrical & Computer Engineering** *Canada, 2020-Present*
  - GPA: 92/100
  - Specialization: Pattern Analysis & Machine Intelligence
  - Vector Institute Scholarship in AI
  - Supervisor: *Prof. Zhou Wang*
- **BSc, Amirkabir University of Technology, Electrical & Computer Engineering** *Iran, 2015-2020*
  - GPA: 18.96/20 (3.94/4)
  - **Ranked 2nd** among 130 students
  - Thesis: Image Generation with More Control over the Latent Space Based on StyleGAN
  - **Ranked 67th** (top 0.6%) | **512th** (top 0.3%) in the Nationwide University Entrance Exam for AI Master's | Undergraduate programs among 11,000 | 180,000 participants

PROFESSIONAL EXPERIENCE

- **Research Intern, SSIMWAVE** *Canada, Spring 2022*
  - Implementing loss functions, Image/Video Quality Assessment (I/VQA) models, and datasets in TorchQA, a machine learning library as an infrastructure for I/VQA, written in PyTorch.
- **Teaching Assistant, UWaterloo & AmirkabirU** *2019-Present*
  - Autonomous Vehicles (2023)
  - Discrete Mathematics & Logic (2022)
  - Probability & Statistics 1 & 2 (2021-2023; 4 times)
  - Operating Systems (2019)
  - Advanced Programming (2019)
- **FrontEnd Developer & Hardware Engineer Intern, IoT Academy** *Iran, Summer & Fall 2018*
  - Implemented a smart garden including 18 flower pots with 4 different actuator types that were controlled based on 7 different sensor types measured using Arduino.
  - Raspberry Pi was programmed in Python as the IoT gateway, and a dashboard was implemented that monitored real-time values and a history of sensors and actuators statuses using HTML, CSS, and JavaScript.
- **BackEnd Developer Intern, Rahnema College** *Iran, Fall 2017*
  - Developing a location-based social network application like Swarm using Spring Framework in Java, MySQL, and MongoDB for the BackEnd.
  - Users may share their location with their friends. For every post, they can upload images, put comments, like the post, and reply to other users' comments.

TECHNICAL SKILLS

- Python, C++, SQL, Assembly, VHDL
- HTML, CSS, JavaScript
- PyTorch, Keras, TensorFlow
- NumPy, Pandas, Scikit-learn, Matplotlib
- MySQL, MongoDB, Spring Framework
- Git, Scrum
- IoT, ARM, AVR, Raspberry Pi, Arduino
- Matlab, PSpice, HSpice

NOTABLE PROJECTS

- **Adversarial Scene Graph Inpainting for Image Synthesis** *Ongoing*
  - Hallucinating objects and relationships in a scene graph to improve the Text-to-Image generation using Graph Convolutional Networks and Generative Adversarial Networks with PyTorch.
- **A Review on GAN-Based Text-to-Image Synthesis Methods** *Spring 2021*
  - Five more appealing GAN-based methods in Text-to-Image synthesis are examined: GAN-INT-CLS, StackGAN, Stack-GAN++, AttnGAN, and DM-GAN.
- **Playing with SinGAN: Super-Resolution** *Fall 2020*
  - Removing BN layers for artifacts, using PReLU, utilizing other noises for the latent space, or other methods for upsampling and changing the loss function with an L1 loss and a VGG network as a feature extractor.

- **A Review on GAN-Based Super-Resolution** *Fall 2020*
  - Five more appealing GAN-based methods that aim to solve the SR problem are examined: SRGAN, ESRGAN, ESRGAN+, SFT-GAN, and SinGAN.
- **Pac-Man Game with Audio Control (Speech Recognition)** *Spring 2018*
  - A computer game, written in C++ (Qt), Controlled by just pronouncing "up", "down", "left", "stop", "start" and "go". A Google Dataset was used for training the CNN with TensorFlow.
- **A Real-time Background Extractor** *Spring 2019*
  - Written in Python using OpenCV, Could detect and extract the background, change it, or add effects to it from a saved image or real-time frames via webcam.
- **Search Algorithms in AI** *Spring 2019*
  - Written in Python from scratch, Including BFS, DFS, DLS, IDDFS, Bidirectional, UCS, and AStar for solving the 8-puzzle problem, and Genetic Algorithm for fitting a polynomial to a dataset.
- **Data Mining Algorithms** *Spring 2019*
  - Written in Python, Including KMeans (to compress an image), DBScan, Decision Tree, Random Forest, Perceptron (a two-layer NN).
- **A program like CamScanner** *Spring 2019*
  - Written in Python using OpenCV, Autodetects edges of an image of a paper and passes it through some filters.
- **A Solution for House Prices: Regression Techniques** *Spring 2019*
  - Written in Python using Scikit-learn and Pandas, Handling outliers, missing data, and encoding the data features. The final result was an average of other models.
- **A Database for an Online Store** *Fall 2018*
  - Written in SQL using MySQL. The database schema was designed and implemented in MySQL, The Online Store could manage the amounts of products, orders, delivery agents, etc.
  - Wrote some queries and triggers to do tasks automatically without a backend platform.
- **Add CPU Scheduling Algorithms to XV6** *Spring 2019*
  - Written in C, Round Robin, FIFO Round Robin, Guaranteed (Fair-Share), and Multilevel queue algorithms.
- **CORDIC Algorithm in FPGA** *Fall 2018*
  - Written in VHDL, Calculating trigonometric functions using the CORDIC algorithm

COURSES

- **Graduate:**
  - Intro to Machine Learning
  - Image Processing & Visual Communication
  - Applied Functional Analysis
  - Data & Knowledge Modelling & Analysis
  - Tools of Intelligent Systems Design
  - Fundamentals of Optimization
- **Undergraduate:**
  - Artificial Intelligence
  - Data Mining
  - Discrete-time Signal Processing
  - Signals & Systems
  - Linear Algebra
  - Probability & Statistics
  - Advanced Programming
  - Algorithm Design & Analysis
  - Data Structures
  - Database Design
  - Operating Systems
- **Online:**
  - Coursera Machine Learning
  - Computer Vision A-Z: OpenCV, SSD & GANs
  - The Complete Python 3 Course
  - The Web Developer Bootcamp