Javid Akhavan

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Professional Experiences

Computer Vision Engineer and Researcher — Stevens Institute of Technology — Hoboken, NJ, Aug 2019 – present

- Designed and implemented a Vision-Transformer-based motion tracker algorithm for interpreting acoustic emission data, leading to the development of an efficient real-time tracking algorithm.
- Devised a labeling assistant dashboard in MATLAB to facilitate database creation and assessment for Machine Learning projects, resulting in a remarkable 10x increase in efficiency and a significant reduction in manual labor.
- Spearheaded the design and development of a deep learning model using customized TensorFlow models for melt pool image processing, achieving a substantial reduction in data processing time from 120s to less than 1s.
- Executed the implementation of Machine Learning methods for feature extraction from diverse data sources, including point clouds and images, utilizing Hybrid Convolutional Auto Encoder-Decoders. This initiative resulted in the establishment of an autonomous anomaly identification and prevention system.
- Pioneered the implementation of a Reinforcement Learning-based controller, employing advanced deep learning techniques in TensorFlow for automating anomaly detection and error mitigation. This groundbreaking work led to real-time fault detection and parameter tuning, with a patent currently in progress.
- Orchestrated a multi-language (Python, MATLAB, C#) command exchange system to automate data and command exchange, streamlining the synchronization of various APIs.
- Acquired proficient hands-on experience in working with various sensors and data acquisition modules, including cameras and laser surface profilometers.

Software Engineer Intern — Johnson and Johnson (J&J) — Trenton, NJ, May 2023 – Aug 2023

- Designed web-based dashboard using dash Plotly for real-time visualization of finances and budgets across various Therapeutic Areas, offering valuable insights into expenditures and project status for the Business Intelligence team.
- Created an Azure-based web application to automate database integration and automated web app access to SharePoint in the backend, resulting in seamless data aggregation and visualization.
- Established ODBC connections to Teradata and Denodo data lakes for Johnson & Johnson, facilitating live data structure integration into web applications for real-time corporate data and metric visualization.
- Developed various creative data visualizations and dashboard designs for J&J teams, leading to an API establishment for enhanced data accessibility being used by multiple teams.
- Developing a Linux-based Rich Text Format (RTF) convertor to PDF for a web app to facilitate confidential data online preview considering data privacies and securities leading to a seamless RTF visualization.
- Gained hands-on experience in application development using git and bit-bucket space for seamless collaboration.

Software and Hardware Developer — Sharif University of Technology — Tehran, Iran, Aug 2018 – Jan 2019

- Designed and implemented an auto-irrigation system in Arduino, resulting in an $8,000 funding raise and laying the foundation for a start-up as an entrepreneur.
- Providing project management support to employees regarding software design, model fabrication, testing, and documentation.
- Developed an auto-grading application to automate homework grading in various domains in MATLAB UI, resulting in a start-up foundation.

Virtual Reality Programmer and Research Intern — Dr. Robot — Tehran, Iran, Jan 2018 – Aug 2018

- Supervised and implemented the Virtual Reality (VR) equipment and synchronization of the auxiliary sensors and devices.
- Designed and developed 10 interactive VR-based software programs in Unity engine, to train and examine pronunciation skills for children aged 7-10.
- Proctored 10 in-field software tests with VR equipment and developed applications with 58 subjects, leading to a successful proof of concept.
- Established assorted libraries for automation and task creation, including Text-To-Speech (TTS) conversion, animation creation, scenario compilation, and Console-VR program Synchronization in C#/Java/Python.

Education

Stevens Institute of Technology, NJ, USA

Graduate Certificate in Machine Learning	Aug 2021 – Dec 2022
Doctor of Philosophy (Ph.D.) | Focused on Artificial Intelligence & Robotics	Aug 2019 – May 2025
Master of Engineering (M.Eng.) | Focused on Artificial Intelligence & Robotics	Aug 2021 – Dec 2022

Technical Skills

- Proficient in Python, with advanced work experience
- Proficient in TensorFlow, with advanced work experience

- Intermediate experience in with SQL and Tableau
- Intermediate experience Web-App development using Dash Plotly experience
- Intermediate experience in C++/C#
- Familiar with Unity and Steam Virtual Reality
- Proficient in MATLAB & Simulink, with advanced work

Certifications

Fundamentals of Reinforcement Learning,	University of Alberta
HSE (Health, Safety, and Environment),	Isfahan Oil Refinery Company
Custom Models, Layers, and Loss Functions with TensorFlow	DeepLearning.AI

Selected Publications

Real-Time Monitoring and Gaussian Process-Based Estimation of The Melt Pool Profile in DED.	ASME-MSEC 2023
A Deep Learning Solution for Real-time Quality Assess & Control in AM Using Point Cloud Data.	JIMS 2023
In-Situ Process Monitoring and In-Plane Anomaly Identification for A.M. Using P. Cloud and ML.	ASME- IDETC&CI 2021
Sensory Data Fusion Using Machine Learning Methods for In-Situ Defect Registration in AM: A Review.	IEMTRONICS 2022
Image-Based Dataset of Artifact Surfaces Fabricated by Additive Manufacturing with Applications in ML.	Data in Brief 2022

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