Ehsan Rahnama

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Tehran, Iran

RESEARCH INTEREST

- Reinforcement Learning
- SLAM Algorithms
- Computer Vision
- Optimization Algorithm
- Localization and Navigation
- Autonomous System
- Intelligent Control Systems
- Robot Perceptions

EDUCATION

University of Tehran Sep 2015 – Jun 2018
M.Sc. in Mechanical Engineering of Biosystem-Renewable Energy Tehran, Iran

- **Master Thesis**: Exergetic, Economic, and Environmental Maps for Photovoltaic Systems
- **Supervisor**: Dr. Mortaza Aghbashlo
- **CGPA**: 17.30/20 - 3.81/4

Shahid Chamran University of Ahvaz Sep 2010 – Sep 2014
B.Sc. in Agriculture Machinery Mechanics Ahvaz, Iran

- **Final Project**: Design and Manufacture of Laboratory Thresher
- **Supervisor**: Dr. Mohammad Javad Sheikhdavoodi
- **CGPA**: 16.61/20 - 3.56/4

PUBLICATION

- **Industrial Scene Change Detection Using Deep Convolutional Neural Networks**
  Atghaei, A., **Rahnama, E.**, Azimi, K., Shahbazi, H. (2022)., arXiv preprint arXiv:2212.14278

- **A New Systematic Decision Support Framework based on Solar Extended Energy Accounting Performance to Prioritize Photovoltaic Sites**
  Aghbashlo, M., Tabatabaei, M., **Rahnama, E.**, Rosen, M. A. (2020)., Journal of Cleaner Production, 256, 120356.

- **Spatio-temporal Solar Exergoeconomic and Exergoenvironmental Maps for Photovoltaic Systems**
  Rahnama, E., Aghbashlo, M., Tabatabaei, M., Khanali, M., Rosen, M. A. (2019)., Energy Conversion and Management, 195, 701-711.

HONORS & CERTIFICATE

- **Generative AI with Large Language Models**, DeepLearning.AI
- **Ranked as the Top 10 % of Class of 2015**, Mechanical Engineering of Biosystems Department, University of Tehran
- **Ranked 4th out of 30 Students of Class of 2010**, Department of Biosystem Engineering, Shahid Chamran University of Ahvaz
- **Waived Tuition** (B.Sc.)

ACADEMIC PROJECTS

Graduate

- Developed a **supervised machine learning model** for the purpose of sorting pistachio nut
- Developed a **regression model** for predicting cation exchange capacity of soil
- Applied **KNN and K-means** algorithm to classify iris plants into different species based on their characteristics.
- Employed **PCA** to reduce the dimensionality of the iris data, effectively extracting the most important features.
- Lecture on hydrogen fuel cell vehicles for renewable energy-based transportation course
- Survey the feasibility of biogas production in the College of Agriculture and Natural Resources.

Undergraduate

- Lecture on **Ant Colony** optimization method
- Implement **Ant Colony algorithm** by Matlab
- Participate in development of **AVR microcontrollers** to measure moisture of soil
- Design laboratory thresher with SolidWorks

PROFESSIONAL EXPERIENCE

ML Engineer May. 2019 – Present

Veunex Tehran, Iran

- **Localized the Conceptual Difference of Two Scenes Using Deep Learning for Housekeeping Usages**, achieved its goal by employing transfer learning for conceptual feature extraction and self-supervised learning for data augmentation.
- **Explored the field of quantization-aware training in depth.**, advance technique while shrinking the model's size, maintaining accuracy, and being utilized for deploying models on edge systems.
- **Trained object detection models capable of handling fluctuating conditions**, Trained models to detect person and personal protective equipment (PPE) that is reliable under varying conditions, such as an industrial setting.
- **Deployed models on embedded systems such as Jetson board**, optimize the chosen model for inference on the Jetson Xavier NX and convert models to other frameworks, especially TensorRT
- **Developed proficiency in deploying models on Nvidia Triton servers**, open-source inference serving software that simplifies the deployment of AI models at scale in production environments, and supports various deep learning frameworks such as TensorFlow, PyTorch, and ONNX.
- **Implemented MLflow for managing ML workflow and establishing a model registry**, deploy this software by docker, register model, compare two or more than two experiments to tune model
- **Developed and deployed classification models using various algorithms**, use from traditional machine learning techniques such as KNN and SVM to deep learning approaches including CNN and ViT and implement by scikit-learn, pytorch or keras framework
- **Demonstrated ability to utilize Python frameworks for visualization of distributed training data**, using pandas, plotly and matplotlib frameworks

SKILLS

Proficient in setting up **CUDA** and **cuDNN** toolkits for Nvidia GPU accelerated computing on **Ubuntu**.

Programming : Python, C/C++, MATLAB, HTML/CSS, T-SQL (PostgreSQL, MySQL)

Framework : Tensorflow, PyTorch, Keras, Scikit-Learn, OpenCV, Numpy, Pandas

Tools : LaTeX, Notion, Jira, GitHub, OBS

Language

- Persian: Native
- English: I will take TOEFL soon

SELECTED COURSES

Graduate

- Artificial Intelligence - 17.25/20
- Intermediate Engineering Mathematics - 15.5/20
- Vehicles Based on Renewable Energy - 20/20
- Research Methods - 16.39/20
- Life Cycle Assessment - 18.5/20
- Advanced Heat Transfer - 17.5/20

Undergraduate

- Statics – 18.5/20
- Dynamics - 16.75/20
- Engineering Design Methods - 17/20
- Engineering Statistics - 17.25/20
- Thermodynamics - 18/20
- Fluid Mechanics – 18/20

REFERENCES

Mohammad Javad Sheikhdavoodi E-mail
Emeritus Professor, Biosystems Department, Shahid Chamran University of Ahvaz

Mortaza Aghbashlo E-mail
Associate Professor, Mechanical Engineering of Biosystems Department, University of Tehran

Majid Khanali E-mail
Associate Professor, Mechanical Engineering of Biosystems Department, University of Tehran

Mohamad Esmail Khorasani Ferdavani E-mail
Assistant Professor, Biosystems Department, Shahid Chamran University of Ahvaz

Omid Reza Roustapour E-mail
Assistant Professor, Agricultural Research, Education and Extension Organization

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