Ali Salehi

Graduate Research Assistant at Electrical and Computer Engineering Department, The University of Memphis

(**F1** Visa holder)

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Summary

Computer vision and machine learning researcher with good theoretical and experimental background in these fields.
I have worked as a researcher and senior developer on commercial video processing systems for more than two years.
Currently, my research is mainly about video processing algorithms, especially developing learning based motion estimation methods.

Research Interests

- Machine Learning
- Computer Vision
- Deep Learning
- Pattern Recognition

Relevant Courses

- Computer Vision (A^+)
- Random Signals & Noises (A)
- Machine Learning (A+)
- Bayesian Inference (A+)
- Statistical Learning (A+)
- Digital Image Processing (A+)
- Digital Video Processing (A+)
- Neural Networks & Fuzzy Systems (A+)
- Statistical Pattern Recognition (A)
- Artificial Intelligence (A+)
- Convex Optimization (Online)

Education

PhD. in Computer Engineering, Department of Electrical and Computer Engineering, The University of Memphis, Memphis, TN, USA (January 2017 – Current)

- **GPA: 3.98**

M.S. in Artificial Intelligence, Department of Computer Engineering, Sharif University of Technology, Tehran, Iran (September 2011- July 2013)

- **GPA: 4.0**

B.S. in Software Engineering, University College of Omran and Toseeh (UCOT), Hamadan, Iran (September 2008 - September 2010)

- **GPA: 3.96**

A.S. in Software Engineering, Malayer University, Hamadan, Iran (September 2006 - September 2008)

- **GPA: 3.66**

Diploma in Physics and Mathematics Discipline, Shohadaye Mersad High School, Hamadan, Iran

- **GPA: 18.5/20**

Research and Working Experience

Computer Vision Researcher & Senior Software Developer, FANAP, Tehran, Iran (March 2015 - January 2017)

- Analyzed and designed commercial road video surveillance system
- Increased accuracy and speed of the vehicle detection and license plate recognition algorithms employing multilabel deep learning structure
- Developed vehicle speed detection and calibration algorithms in a mono-vision form
- Designed and managed commercial data collection process
- Implemented the designed solutions in C++
- Tested and optimized the algorithms in a real-world situation
- Implemented cross-platform version of the algorithms for Linux, Windows PCs, and Raspberry Pi

Technical Manager, FANAP – Pasargad Fartak Arian, Tehran, Iran (July 2013 - March 2015)

- Managed the operations of an enterprise web development team
- Design, implement and deploy new modules
- Worked closely with DBAs, system and network engineers to ensure web system stability
- Monitor health of servers and overall website environment
- Managed and developed all the projects based on Agile methodology
- Collaborated with other departments of the company to plan and develop a high-quality product

Research Assistant at Intelligent System Laboratory (ISL), Department of Computer Engineering, Sharif University of Technology, Tehran, Iran (September 2011 – September 2013)

- Designed and implement deep learning and computer vision algorithms

Member of the Soshiant Robotics Team, Department of Computer Engineering, Buali Sina University, Hamadan, Iran (September 2010 – October 2011)

- Designed a fuzzy obstacle avoidance controller for a rescue robot

President of the Science Student's Association, Malayer University (December 2006 - September 2008)

- Hosted several scientific and social events

Teaching Experiences

Teaching Assistant:

- **Electrical & Computer Project,** The University of Memphis **(**January 2017 - May 2017):
  - Assisted students to design and implement several projects including Hand gesture recognition system on Raspberry Pi, Broken light alarm and baby temperature monitoring systems using Arduino and Smart Mirror with face detection system on Raspberry Pi

- **Machine Learning,** Sharif University of Technology (September 2012 - February 2013)
- **Neural Networks and Fuzzy Systems,** Sharif University of Technology **(**February 2013 - July 2013)
- **Computer Architecture,** University College of Omran and Toseeh (September 2009 - February 2010)
- **Assembly Language and Programming,** University College of Omran and Toseeh **(**September 2009 - February 2010)

Lecturer, Hamadan Technical and Vocational Training Organization, Hamadan, Iran (September 2010 - September 2011)

- Programming languages including C, C++, and PHP

Patent

Intelligent system for Fuzzy Diagnosis of Epilepsy, Ali Salehi, Fatemeh Asgari, and Seyed Mehdi Rostayan, August 2014, Iran.

Honors and Awards

- **Graduate Herff Fellowship**, The Herff Fellowship provides financial support to outstanding graduate students in the Herff College of Engineering to support their studies toward the MS or Ph.D. degree. Awards are granted to highly qualified applicants consistent with Herff College goals
- **1st Rank**, in Cumulative GPA among more than 115 B.Sc. Software Engineering students of the department, 2008 beginners, University College of Omran and Toseeh
- **1st Rank**, in Cumulative GPA among more than 40 B.Sc. Software Engineering students of the department, 2006 beginners, Malayer University
- **Admission to the best university of Iran** (Sharif University of Technology) for the M.Sc. program (2011)
- **Best employee award**, FANAP – Pasargad Fartak Arian (2014)

Relevant Skills

- Programming languages: C++, C, Python, C#, MATLAB, R.
  Familiar with: Pascal, Delphi, Assembly, PHP, ASP.net
- Deep learning frameworks: Tensorflow, Caffe
- Machine learning and data mining: Matlab Toolbox, LibSVM, Weka, RapidMiner
- Image processing: OpenCV, Matlab Toolbox
- Operating systems: Linux (Ubuntu), Windows
- Typesetting: LaTeX, MS Word
- Familiar with: SQL Server, Oracle, Apache, WordPress CMS, Joomla CMS
- Electronics platform: Arduino, Roseberry Pi
- Project management, Team management, Team building
- Software methodology: Agile (Scrum)

Language Skills

- **Persian**: Native
- **Azari**: Native
- **Arabic**: Familiar
- **English**: Fluent
  - TOEFL IBT: 104/120
  - GRE: Quantitative Reasoning (162) – Verbal (151) – Writing (4.0)

Publication

Asgari, F., **Salehi**, A. **The Biologically Inspired Hierarchical Temporal Memory Model for Farsi Handwritten Digit and Letter Recognition**, International Journal of Computer Applications 129(16):6-11, November 2015. Published by Foundation of Computer Science (FCS), NY, USA

Selected Projects

- **Multimodal Variational Autoencoder:** Designed a multimodal autoencoder to map images and corresponding audio to a shared representation that makes it possible to complete noisy data and generate one modality using another one.

- **Intelligent Billboard** (2015, FANAP): Designed an intelligent billboard that uses deep learning based face recognition methods to recognize the age range and gender of a person who looks at it in order to present appropriate advertisements.

- **Contribution in Commercial Automatic Number Plate Recognition project** (2015, FANAP): Designed and implemented a Convolutional Neural Network based plate recognition module, which is two times faster and more accurate (improved from 94% to 96%). Utilizing Background Subtraction methods, also improved the speed of plate detection module about 1.5 times faster.

- **Vehicle Type Classification** (2015, FANAP): Implemented a real time commercial vehicle type classifier used in a large-scale commercial road surveillance system.

- **Image Representation in Indoor Scene Classification** (2014): Designed a hierarchical feature extraction method which uses dictionary learning algorithms to encode objects and then images

- **Handwritten Character Classification** (2013): Designed fast and discriminative feature to classify Persian handwritten characters

- **Implementing a video codec** using MATLAB (2013, Digital Video Processing course)

- **Simulation and analysis of complex dynamical network**s using MATLAB, (2012, Complex Dynamical Networks course)

- **Evaluation of statistical approaches to news classification** using MATLAB (2012, Statistical Pattern Recognition course project)

- **Finding stochastic shortest paths (SSP) in an uncertain environment using:**
  - Ant colony optimization using MATLAB (2012, Computational Intelligence course)

  - Reinforcement learning algorithms using MATLAB (2012, Machine Learning course).
  - Evolutionary algorithms using MATLAB (2012, Computational Intelligence course)

- **Designing and implementing sensor based obstacle avoidance controller in the unknown environment for a mobile robot using Fuzzy Logic** in visual C# (2011, Soshiant Robotics Team and Neural Networks and Fuzzy Systems course)

References

- **Dr. Mahdi Jalili**, Assistant Professor, Department of Computer Engineering, Sharif University of Technology (Currently at RMIT University). **Email**: mahdi.jalili@rmit.edu.au

- **Dr. Hassan Bashiri**, Faculty Member, Department of Computer Science, Hamadan University of Technology
Email: bashiri@hut.ac.ir