

# Hamidreza Shayegh Boroujeni

Assistant professor

Department of Computer Engineering, Shahid Rajaee University

## Contact

Computer engineering faculty, Lavizan, Tehran, Iran

Cellphone: +98 912 812 8512, Email: [h.shayegh@sru.ac.ir](mailto:h.shayegh@sru.ac.ir), Webpage: <https://www.sru.ac.ir/shayegh/>

## Education

**2009 – 2014**

**PH.D. IN COMPUTER SCIENCE, TARBIAT MODARES UNIVERSITY, TEHRAN, IRAN**

**Area of research:** Computer Vision, Video processing, Machine learning.

**GPA:** 18.08/20 (A+)

**Thesis Title (written in Farsi):** A hierarchical framework for complex human activity recognition based on a probabilistic descriptive approach

**2007- 2009**

**MASTER OF COMPUTER SCIENCE, TARBIAT MODARES UNIVERSITY, TEHRAN, IRAN**

**Area of research:** Computer Vision, Video processing, Machine learning.

**GPA:** 16.67/20 (A)

**Thesis Title (written in Farsi):** Motion object tracking based on particle filters and shadow detection approaches

**2002 - 2006**

**BACHELOR OF SOFTWARE ENGINEERING, UNIVERSITY OF ISFAHAN, ISFAHAN, IRAN**

## Academic Vision

My career has focused on high impact research, practice and education in machine learning and computer vision starting with my M.S thesis. Effective Intelligent Machine Vision systems requires science, engineering and technology. My goal has been and is to make a suitable connection between these three dimensions and provide innovation and usefulness in real world solutions. I have worked on more than 10 CV-ML projects such as motion object detection and tracking, human activity recognition, medical imaging system, image enhancement, etc.

## Academic Experience

- **Shahid Rajaee University, Tehran, Iran, 2012 onwards:**
  - Assistant Professor of Computer Engineering Department (2012 - present).
  - Student Vice Chancellor at Computer Engineering Faculty (2018-2019).
  - Kharazmi Competition Referee (Computer & AI section 2013-2020)
- **University of Applied Science and Technology (UAST), Tehran, Iran, 2008-2014:**
  - University Lecturer for more than 5 different branches. Teaching more than 8 different courses.
- **Elm-o-Sanat University (Behshahr Branch, Behshahr, Iran), 2012-2014:**
  - University Lecturer.

## Professional Recognition & Awards

- **Citations and Impact.** (Based on current Google Scholar) 144+ citations, h-index 7.
- **Kharazmi Competition Referee (Computer & AI section 2013-2020).**
- **Best Paper Awards.** Third Knowledge Technology Week, KTW 2011, Kajang, Malaysia, July 18-22, 2011. Paper: A novel fuzzy hmm approach for human action recognition in video
- **ACM Award.** ACM programming competition, Isfahan, Iran 2005.

## Selected Publications:

- New method for optimization of license plate recognition system with use of edge detection and connected component, IEEE ICCKE 2013 (3rd International Conference on Computer and Knowledge Engineering).
- A novel fuzzy hmm approach for human action recognition in video, Communications in Computer and Information Science, Springer, volume 295 2011.
- Real-time and efficient method for accuracy enhancement of edge based license plate recognition system, 2013 First International Conference on computer, Information Technology and Digital Media.
- Novel and tunable method for skin detection based on hybrid color space and color statistical features, 2013 First International Conference on computer, Information Technology and Digital Media.
- A novel fuzzy hmm approach for human action recognition in video, International Journal of Computer & Information Technologies ·Vol: 1 ·Issue: 3, 2014.
- Robust moving shadow detection with hierarchical mixture of MLP experts, Signal, Image and Video Processing, , Springer, 2014

## Research Highlights

- **Statistics:** 45+ papers (with 15+ co-authors) (20+ paper in English and others in Persian language), 12 M.S graduates, 5+ research grants.
- **Research domain:** The main domains of my research are Computer Vision and Machine Learning. Specifically, my thesis subjects in both PhD and Master focused on intelligent cameras and video processing systems especially on motion object detection, object tracking, human action recognition, and abnormal activity recognition. This two researches caused to development of commercial applications which are currently used in some buildings of central bank of Iran for abnormal activity recognition.
- **Ongoing research agenda:** Pursuing world-leading research in the scientific foundations of computer vision and their convergent applications in diverse domains, including medical, sport, autonomous vehicles, surveillance, virtual reality and IOT. Current focus is on foundations and technology of deep learning based models in computer vision applications.
- **Research impact:** My research on many ML & CV domains, remains influential and state-of-the-art. My results of two interesting researches are currently using in real world (Abnormal Activity recognition & License plate recognition). I expect my ongoing work on deep learning approaches in computer vision, especially transfer learning approaches in surveillance to have considerable impact on researchers and practitioners in the 2021s.

## Teaching Experience

- Through my 10 years span I taught many graduate and undergraduate courses from basic computer science concepts up to advanced concepts of machine learning and computer vision. At the early stages of my career, I taught basic computer skills including Windows and Microsoft office. These courses were required for freshman students by all the departments in the university and not just the Computer Science department. I dealt with different students who have different interests in computer science in general. I managed the learning process through interacting with students and encourage them to ask questions and discuss different topics related to the course topics.

- I taught programming languages courses (C, C++) for the sophomore students. I managed to promote the student level of thinking and came up with different solutions for different given problems, through providing them with examples, homework and classroom quizzes.
- As I said, I have taught many subjects of computer engineering. Below is the list of courses which I have teaching experiences on them:
- Graduate Courses:
  - Semantic Web
  - Computer vision
  - Advance operating Systems
  - Computer Graphics
- Under graduate courses:
  - Design and implementation of algorithms
  - Design and implementation of programming languages
  - Compiler concepts
  - Operating systems
  - Data structure
  - Software Engineering
  - Computer Graphics
  - Languages theory
  - Web design

## Industry Experience

- I have extensive software development experience in financial and banking industry. I have worked as software developer and technical manager in this field for more than 10 years. I am familiar with novel software development concepts such as Microservice Architecture, SOA, SAAS, Scrum, CI/CD, DevOps. I have worked with some useful programming languages and tools such as Python (Pandas, Flask, pytorch, tensorflow), php (Symfony, Laravel), JavaScript, CSS, SQL, C++, Rest & Soap protocols, MongoDB.

## Highlighted Skills

**Machine learning:** Supervised, Semi-supervised and Unsupervised Learning, Deep Learning, Transfer Learning, Genetic Algorithm.

**Computer vision:** Image Processing (OCR, Medical, Vehicles) Video Object Tracking, Action recognition.

**Software development:** Microservice Architecture, SOA, SAAS, RUP, Scrum, CI/CD, DevOps.

**Software & programming languages:** Python (Pandas, Flask, Django, Pytorch), php (Symfony, Laravel), JavaScript, CSS, SQL, C++, Rest & Soap protocols, MongoDB.

**Deep learning:** CNN, LSTM, Tensor Flow, RNN.

**Management:** Agile Coach, Scrum Master, IT project Management.

**Teaching:** Data Structure, Compiler, Distributed systems, Semantic web, Design & implementation of programming languages, Algorithm design concepts, Computer Vision, etc.

**Soft Skills:** Teamwork, Research, Innovation, Problem Solving, competent communication and presentation skills

List of publications (only English papers. To see my Persian papers look at [here](#)):

TITLE

[Cluster-based Ensemble Classification Approach for Anomaly Detection in the Internet of Things](#)

M Hosseini, HS Brojeni  
International Journal of Sensors Wireless Communications and Control 10 (4 ...

[Electronic voting through DE-PBFT consensus and DAG data structure](#)

J Bahri, HRS Borojeni  
2019 9th International Conference on Computer and Knowledge Engineering ...

[A hybrid approach for anomaly detection in the Internet of Things](#)

M Hosseini, HRS Borojeni  
Proceedings of the international conference on smart cities and internet of ...

[Robust moving shadow detection with hierarchical mixture of MLP experts](#)

HS Boroujeni, NM Charkari  
Signal, Image and Video Processing 8 (7), 1291-1305

[Real-time and efficient method for accuracy enhancement of edge based license plate recognition system](#)

R Azad, B Azad, HR Shayegh  
arXiv preprint arXiv:1407.6498

[Novel and tuneable method for skin detection based on hybrid color space and color statistical features](#)

R Azad, HR Shayegh  
arXiv preprint arXiv:1407.6506

[A Robust and Efficient Method for Improving Accuracy of License Plate Characters Recognition](#)

R Azad, HR Shayegh, H Amiri  
arXiv preprint arXiv:1407.6705

[Recognition of handwritten Persian/Arabic numerals based on robust feature set and K-NN classifier](#)

R Azad, F Davami, HR Shayegh  
arXiv preprint arXiv:1407.6492

[New framework based on complementary methods for efficiency and accuracy of license plate recognition system](#)

R Azad, F Davami, J Jeo, HR Shayegh  
2014 6th Conference on Information and Knowledge Technology (IKT), 171-176

[LYING HUMAN ACTIVITY RECOGNITION BASED ON SHAPE CHARACTERISTICS](#)

RADA HAKIMI, CN MOGHADAM, JA NASIRI, BHR SHAYEGH

[A New Approach Towards Web Security Cracking based on CAPTCHA Recognition Using Mixture of Experts](#)

R Azad, HR Shayegh, B Azad, S Jamali  
IJCNIS 6 (10), 24-31

[Human detection in semi-dense scenes using HOG descriptor and mixture of SVMs](#)

A Rajaei, H Shayegh, NM Charkari  
ICCKE 2013, 229-234

[New method for optimization of license plate recognition system with use of edge detection and connected component](#)

R Azad, HR Shayegh  
ICCKE 2013, 21-25

## TITLE

### [Lying human activity recognition based on shape characteristics](#)

AH Rad, NM Charkari, JA Nasiri, HRS Broojeni  
2012 2nd International eConference on Computer and Knowledge Engineering ...

### [A robust moving shadow detection algorithm based on semi-supervised hierarchical mixture of MLP-experts](#)

A Jalilvand  
2011 International Conference of Soft Computing and Pattern Recognition ...

### [CWSURF: A novel coloured local invariant descriptor based on SURF](#)

A Jalilvand, HS Boroujeni, NM Charkari  
2011 1st International eConference on Computer and Knowledge Engineering ...

### [CH-SIFT: A local kernel color histogram SIFT based descriptor](#)

A Jalilvand, HS Boroujeni, NM Charkari  
2011 International Conference on Multimedia Technology, 6269-6272

### [Model Based Human Pose Estimation in MultiCamera Using Weighted Particle Filters](#)

M Behrouzifar, HS Boroujeni, NM Charkari, K Mozafari  
Knowledge Technology Week, 234-243

### [Tracking multiple variable-sizes moving objects in LFR videos using a novel genetic algorithm approach](#)

HS Boroujeni, NM Charkari, M Behrouzifar, PT Makhsoos  
Knowledge Technology Week, 143-153

### [A novel fuzzy hmm approach for human action recognition in video](#)

K Mozafari, NM Charkari, HS Boroujeni, M Behrouzifar  
Knowledge Technology Week, 184-193

### [A new background subtraction method in video sequences based on temporal motion windows](#)

HRS Broojeni, NM Charkari  
International Conference on IT

### [Improving Feature Vector by Words' Position and Sequence for Text Classification](#)

PT Makhsoos, MR Kangavari, HR Shayegh  
International Conference on IT to Celebrate S. Charmonman's 72nd Birthday

### [A New Flexible Method for Workflow Management](#)

PT Makhsoos, MR Kangavari, HR Shayegh