Javad Amirian

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Research Interests

- Computer Vision
- Deep Learning and Generative Models
- Crowd Simulation and Motion Planning

Education

PhD Candidate
Inria, Rennes, France 2018-2021
Title: Short-term Pedestrian Prediction for Robot Navigation in Crowded Space

Master of Science in Computer Engineering (Artificial Intelligence)
Sharif University of Technology, Tehran, Iran 2012 - 2014
GPA: 16.66/20
Ranked 11th in nationwide M.Sc. university entrance exam for Artificial Intelligence, Iran 2012

Bachelor of Science in Electrical Engineering (Electronics)
Shahid Behesti University (National University of Iran), Tehran, Iran 2007 - 2012
GPA: 15.44/20
Top 0.6% nationwide entrance exam of Iranian Universities, among more than 300,000 participants. 2007

Diploma in Mathematics and Physics
Tiz-Hooshan School (National Org for Development of Exceptional Talents), Kermanshah, Iran 2000 - 2007
GPA: 18.00/20

Graduate Courses

Machine Learning, Statistical Pattern Recognition, Computational Intelligence, Image Processing, Planning in Artificial Intelligence, Speech Processing, Stochastic Processes.

Professional Experience

Team Leader @ Cyrus Robotics (Small-Size Soccer Team of Shahid Beheshti Univ.) 2010 - 2015
Besides experiencing a professional team work management of seven graduate and undergraduate students, I heve been designing and developing electronic boards and embedded systems of the robots as electronic designer until 2012. During this period, a small wireless network was formed using Zigbee technology to enable communication between robots. Decision commands sent from Off-field computer were parsed and executed with ARM-based micro-controller that run a PI controller to drive the robot wheels at a desired speed and trigger the kicker module.
After 2012 I joined the software group and rewritten AI codes to c++. I developed the motion planning module based on an idea in my MSc thesis. We also introduced an approach to improve the robot movements and compensating inaccuracies in robot building using a Takegi-Sugeno fuzzy method. In 2014 we implemented a speech recognition system to convert human voice signals into robot commands in order to facilitate robot learning.

Computer Vision Expert @ Sepehr Etelaat Co. (Related to Sharif Univ.) May 2015 - present
Sepehr is a computer vision based company that develop solutions in sport analysis. My job is developing image processing and vision algorithms and providing high-level API for UI programmers. My current project is a software for adding virtual advertisement to sport videos. A main processing step in this system is to estimate camera calibration based on corresponding points in soccer pitch. The vision engine has several processing modules including camera position estimation, camera pose exhaustive search for initializing pose tracker, shot boundary detection, Levenberg–Marquardt Based Optimizer and etc. Many AI techniques are utilized in this software such as GA, Kalman Smoothing, Optical Flow etc.

Computer Vision Expert @ Spad System Co. April 2016 - present
Spadsystem is a startup software company that was founded in 2013. It specializes in accounting and management tools. Company started developing an automatic license plate recognition system for Iranian vehicles (Didbaan) and I joined the team in 2016 as a vision expert. My role is developing vision algorithms and also revising existing codes with OpenCV. I designed a tool for detecting moving objects using motion segmentation technique and also optimized an existing LBP descriptor to find the plates regions in the image. Furthermore I implemented a Persian OCR module using standard C++ libraries to extract the content of the plates.

Teaching Experience

- *Teaching Assistant* of Numerical Optimization course — Spring 2017
  Dr. S. Hamid Amiri (Shahid Rajaee University)
- *Teaching Assistant* of Machine Vision course (CE-40687) — Spring 2014
  Dr. Mansour Jamzad (Sharif University of Technology)
- *Teaching Assistant* of Digital Design course — Spring 2010, Spring 2011
  Dr. Somayeh Timarchi (Shahid Beheshti University)
- *Lecturer* of Introduction to AVR Microcontrollers — 2009-2011
  At Scientific Association of Electrical Engineering (Shahid Behshti University)

Selected Publications

- **Amirian, J.**, Van Toll, W., Hayet, J. B., Pettré, J. (2019, July). **"Data-Driven Crowd Simulation with Generative Adversarial Networks."** In Proceedings of the 32nd International Conference on Computer Animation and Social Agents (pp. 7-10).
- **Amirian, J.**, Hayet, J. B., Pettré, J., **"Social ways: Learning multi-modal distributions of pedestrian trajectories with GANs,"** IEEE Conference on Computer Vision and Pattern Recognition Workshops, 2019.
- (TDP) **Amiryan, J.**, Raeessi, S., Payandeh, P., Nadimi, B., Nouri, N., Kamali, M. R., Nazemi, E., **"CYRUS 2016 Team Description Paper,"** 2016.
- **Amiryan, J.**, Jamzad, M., **"Adaptive motion planning with artificial potential fields using a prior path,"** Robotics and Mechatronics (ICROM), 2015 3rd RSI International Conference on, 2015.
- (MSc Thesis) **Amiryan, J.**, **"Dynamic Motion Planning and Obstacle Avoidance Simulation for Autonomous Robot-car in Webots,"** MSc Thesis, Department of Computer Engineering, Sharif University of Technology, August 2014.
- Mazloum, J., Jalali, A., **Amiryan, J.**, **"A novel bidirectional neural network for face recognition,"** Computer and Knowledge Engineering (ICCKE), 2012 2nd International eConference on. IEEE, 2012.

Skills

- **OS:** Microsoft Windows; Linux (Ubuntu, Fedora, CentOS); Android.
- **Office Tools:** LaTeX; Libre Office; Microsoft Word, Excel, PowerPoint, Visio.
- **Graphic Tools:** Adobe Photoshop, Adobe Premiere; 3ds Max.

- **Software Design:** OOD; Concurrent and Multithread; Modular Programming.
- **Programming Languages:** C/C++, Matlab, Python, Java.
- **Database:** PostgreSQL, ODB (ORM).
- **Version Control:** git.
- **AI and Robotics Tools:** OpenCV, Image Processing Toolbox, Webots Simulator, Weka.
- **Embedded Design:** ARM Processors (AT91, LPC), Atmel AVR Family, C51 Family; Altium Designer, Proteus, Protel.

Activities

- I love robots and robotic competitions, I have participated in many robotic events in fields of intelligent mouses and soccer robots.
- former member of technical committee (TC) of Small Size League at Robocup Iran Open. Link.
- interested in football and fan of Perspolis club. Going to stadium and encouraging my favorite team is one of my most exciting entertainments.
- doing Body-building, Hiking, playing Futsal, and also sport video games such as FIFA, PES and NFS!

References

- **Dr. Julien Pettre**
  Research Scientist at Rainbow, INRIA-Rennes, Brittany, France
  Email: julien.pettre@inria.fr
- **Dr. Jean-Bernard Hayet**
  Researcher at CIMAT, Department of Computer Science., Guanajuato, Mexico
  Email: jbhayet@cimat.mx
- **Dr. Mansour Jamzad**
  Department of Computer Engineering, Sharif University of Technology,Tehran, Iran
  Email: jamzad@sharif.edu
- **Dr. Eslam Nazemi**
  Department of Electrical and Computer Engineering, Shahid Beheshti University, Tehran , Iran
  Email: nazemi@sbu.ac.ir
- **Dr. Mohamad Eshghi**
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