# Ali Valehi

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https://scholar.google.com/citations?user=q7QhVKUAAAAJ

## Publication

1. J. Chen, A. Valehi and A. Razi, "Smart Heart Monitoring: Early Prediction of Heart Problems Through Predictive Analysis of ECG Signals," in IEEE Access,2019
2. J Chen, A Valehi, F Afghah, A Razi "A Deviation Analysis Framework for ECG Signals Using Controlled Spatial Transformation" IEEE-EMBS International Conferences on Biomedical and Health Informatics (IEEE BHI),2018
3. A.Valehi, A.Razi "Online Learning Method to Maximize Energy Efficiency of Cognitive Sensor Networks" in IEEE Communications Letters, vol. 22, no. 5, pp. 1050-1053, May 2018.
4. A.Valehi, A.Razi "Maximizing Energy Efficiency of Cognitive Wireless Sensor Networks with Constrained Age of Information" IEEE Transactions on Cognitive Communications and Networking ,3, 643-654,2017
5. A.Razi, A.Valehi "Delay minimization by adaptive framing policy in cognitive sensor networks" 2017 IEEE Wireless Communications and Networking Conference(WCNC), San Francisco, 2017.
6. A.Valehi, A.Razi, B.Cambou, W.Yu, M.Kozicki, " A graph matching algorithm for user authentication in data networks using image-based physical unclonable functions" 2017 SAI Computing Conference,UK, 2017.
7. M Soufi, M Amini, MA Zomorodian, A Valehi "Designing the low noise 2 GHz amplifier for the RF receivers" IOSR Journal of Computer Engineering (IOSR-JCE) 18 (4), 109-112 Aug. 2016
8. K. S. Oskooyee, M. R. Kashani, N. Aref, M.Ghaemi, A. Valehi and F. J. Moghaddam, "Robots in love: Evolutionary psychology, artificial life, and cognitive robotics," 2012 IEEE 11th International Conference on Cognitive Informatics and Cognitive Computing,JP, 2012, pp. 460-464.

## Skills

| | |
|---|---|
| **Programming** | Proficient in Matlab,C ++,Python,PHP |
| **Databases** | MySQL, PostgreSQL |
| **Utilities** | GitHub, Keras, Tensorflow, Linux, OpenCV. AWS |
| **Hardware** | AVR, ARM, FPGA, Arduino |
| **knowledge** | Deep learning, Stochastic optimization, Statistics, Machine learning (random forest, boosting tree, Support Vector Machine, K Nearest Neighbor, etc. ), Graph analysis, Dynamic control, Computer vision(convolutional neural network, Object detection, Face recognition),. |

## Experience

**Interwest Consulting Group** *Ontario, California*

Software Developer *May. 2018-Present*

Developing web-based software according to clients need using tools like: C#, Javascript and etc.

**School of Informatics, Computing, and Cyber Systems Northern Arizona University** *Flagstaff, AZ*

Research Specialist *May. 2017-May 2018*

- * predictive modeling of cardiovascular disease
  - Used wavelet decomposition and other signal processing method to extract features from ECG signal, and designed an patient-adaptable multi-stage unsupervised learning algorithm. the method is capable to improve predicting accuracy up to 10%.
- Simulation of biochemical reactions:
  - Adding new features to BioNetGen in Perl, NFsim in C++ (tools for high computational biochemical simulation).
- Real time optimizing in a dynamic system.
  - Online machine learning: proposing a optimal control method by implementing a feedback system in a communication channel
- Accent adjustment system using deep learning:
  - Deep learning for speech recognition implemented using Tensorflow, keras and Python (scikit-learn).
  - Natural language processing (NLP) using Python (NLTK)

**School of Informatics, Computing, and Cyber Systems Northern Arizona University** *Flagstaff, AZ*

Research Assistant *Jan. 2016-May 2017*

- User authentication based on physical pattern Developing Matlab program for corresponding image processing tasks.
  - Developing a graph matching algorithm with higher accuracy rate
  - All programs were implemented in High performance computing environment (AWS)
- Implementation of face recognition and object recognition for a robot
  - The software was based on OpenCV and implemented in C++
  - Implemented using SIFT and SURF algorithm and HAAR classifier
- Designing a self optimizing inertial measurement unit. The research includes following areas:
  - Signal processing(Noise filtering, Kalman filter)

*Flagstaff, AZ*

Teaching Assistant *Jan. 2016-May 2017*

- Responsible for designing lab materials, lectures, grading and mentoring students. Including :
  - Pattern Recognition and Machine Learning
  - FPGA Lab.
  - Digital logic Lab.
  - Communication systems.
  - Project design
  - Electrical engineering
  - Electrical engineering Lab
  - Automatic control Lab

# Education

**Northern Arizona University** *Flagstaff, AZ*

M.Sc. in Electrical Engineering *JAN. 2016 - JUN. 2017*

- Courses:
  Pattern Recognition and Machine Learning, Image processing and Computer vision, Advanced Statistical analyzing and Stochastic and Random Process Analyzing
- Thesis: Maximizing energy efficiency of cognitive radio sensor networks with different Levels of channel availability awareness
  In this thesis by mathematically modeling a cognitive system, an optimum solution for maximization of energy efficiency and reducing end-to-end latency is suggested. In addition, a practical learning algorithm for optimizing a dynamic system with no prior knowledge of characteristic using online machine learning is proposed

**Azad University of Tehran** *Tehran, Iran*

B.Sc. in Electrical Engineering *SEP. 2010 - April. 2015*

- Thesis: Brain Computer Interface – Controlling a Robot arm using brainwave. This project involved capturing brain waves (EEG), de-noiseing, detecting corresponding waves to brain attention and focus and controlling a robotic arm using level of attention and focus

**Coursera** *online*

Deep Learning Specialization *2019*

# Academic projects

- Implementing a communication system predictor using online and reinforcement machine learning methods.(2017)
- Quick data retrieving algorithm for a large genomic data (70GB) (2017)
- Web crawling tools for optimizing search engine such as Google implemented in PHP (2016)
- Controlling mouse cursor using eye tracking in C# using EmguCV library by tracking eye color and pattern. (2010)
- 3D robot soccer simulation in C# as a part of national RoboCup competition. (2010)

# Honors & Awards

since 2018 **Technical Committee member**, Advanced International Conference on Telecommunications
since 2019 **Technical Committee member**, Vehicular Technology Conference