Amirhossein Daraie | CV

AmirKabir University – Department of Electrical and Biomedical Engineering

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 Amirhdre •   Amirdre

RESEARCH INTERESTS

- Neuroscience specifically the physiology of memory and spatial navigation
- Signal processing
- Machine learning
- Virtual reality

EDUCATION

- **Bachelor of Science**   2018–2022
  - *Amirkabir University of Technology*   *Tehran-Iran*
    - Biomedical Engineering (Bioelectric)
      - GPA: 4/4
      - Score: 18.28 via 100 units
    - Electrical Engineering (Control)
      - GPA: 4/4
      - Score: 18.66 via 60 units

HONORS and AWARDS

- Ranked in the top 5% of my class, Biomedical and Electrical Engineering, Amirkabir University of Technology.
- Granted admission from Talented Student Office of Amirkabir University of Technology for studying a second degree in electrical and computer engineering.
- 1st Place, main competition RoboCup Junior 2019, Sydney, Australia.
- 1st Place, Super team Competition RoboCup Junior 2016, Leipzig, Germany.
- 1st Place, Best Electronics Design RoboCup Junior 2015, Hefei, China.
- 1st Place, Super Team Competition RoboCup Junior 2015, Hefei, China.
- 1st Place, Rescue Maze Robot IranOpen International Competition 2017.
- 1st Place, Rescue Line Robot IranOpen International Competition 2016.
- 2nd Place, Individual Competition RoboCup Junior 2016, Leipzig, Germany.
- 4th Place, SharifCup Line Follower Sharif University of Technology 2015
- Best Electronics Design RoboCup Junior 2015, Hefei, China.
- Best Team Spirit RoboCup Junior 2019, Sydney, Australia.

WORK and EXPERIENCE

- *Neuroscience Exchange Student*   June 2018-2020
  Studied a 6 unit Neuroscience course at medical university and hospital. Topics including but not limited to:
    - Cognitive Functions and the Organization of the Cerebral Cortex
    - Emotion in the brain, Determination of Facial Expressions, The Limbic System, etc.
    - Attention across Sensory Modalities, Problems with the Concept of Attention as Executive Control
    - ...
    - Technologies used:
      - DTI, f-MRI, TMS
      - Psychotherapy

· Virtual and Augmented Reality
o 🤖 *Team Leader and Programmer*   June 2014-present
Developing the software and hardware for an autonomous robot. Title of my working experience including but not limited to:
- Programming and implementing different navigation algorithms in robots
- Implementing efficient methods to rescue various victims
- Thought over 15 students, how to:
  · Do C, C++ programming
  · Design PCB with ATmega microcontrollers
  · Design and simulate rescue robots
  · Think logically
  · Lead a team
- ...
- Technologies used:
  · Arm Cortex-M3 processor
  · OpenCV, Caffe
  · Raspberry Pi, OpenMV
  · Altium Designer, LTSpice, SolidWorks, Codevision AVR

VOLUNTEER EXPERIENCE

o Neuroscience course coordinator and class representative
- Special summer course on neuroscience.
- I was a joint student from Amirkabir Engineering University to the Medical School.
o History of neuroscience course coordinator and class representative
- Special summer course on the history of inventions and discoveries in neuroscience.
- I was a joint student from Amirkabir Engineering University to the Medical School.

LICENSES and CERTIFICATIONS

o ÖSD Zertifikat Deutsch Österreich B1 (ZDÖ B1) Österreichisches Sprachdiplom Deutsch, Sep 2020
o CIW Web Development Professional certification.2016
o Cambridge English: Preliminary (PET). Cambridge University, April 2015
o Javascript, jQuery, and AJAX Certification.Tehran Institute of Technology (MFT), Dec 2014

LANGUAGE SKILLS

o Persian   Native
o English   Professional
o German   Intermediate, B2.2

PROJECTS

o Simulating a pulse-coupled neural network (PCNN) model of mammalian cortex with Izhikevich model
- Simulated a networks of spiking neurons.
- Stimulated network with different inputs.
- Fourier analysis of spiking time series.
- Simulated collective dynamics and rhythms similar to those of the mammalian cortex in the awake state.
- Supervisor: Dr. Mehrdad Saviz
o Visualization of preparatory activity in the ALM and the CN
- Visualized neural activity recorded in the paper: A cortico-cerebellar loop for motor planning. Nature 56.
- Analyzed neural dynamics in lower dimensional feature space from correlational structure across 64 channels of data.
- Visualized state-space trajectories via PCA.
- Supervisor: Dr. Mehrdad Saviz

WORKSHOPS

- Artificial Intelligence Winter School. IPM - Institute For Research In Fundamental Sciences
- Preparing, Delivering and Evaluating Perfect Scientific Presentation. TUMS
- Resolving Conflict and Disputes in Academic Environment. TUMS
- Use of Animals and Humans in Biomedical Experimentation. TUMS
- Lab and Workplace Ethics and Scientific Record Keeping. TUMS
- Management of Conflict of Interest in University. TUMS
- Active Participation in a Debate Competition: What it means to be a truly educated person? TUMS
- Ownership of Data and Intellectual Property Rights. TUMS
- Collaboration and Team Work in Scientific Research.TUMS
- Scientific Mentorship - Basic, Norms and Policies. TUMS
- Poster Preparation, Presentation and Evaluation. TUMS
- Plagiarism and Scientific Misconduct, Basics, Techniques and Policies. TUMS
- Scientific Authorship. TUMS
- Systematic Book Reading for Smart Learning. TUMS
- Basic Styles of Academic Leadership. TUMS
- Best and Worst Styles of Academic Leadership. TUMS

COURSES

- Neural Networks: Theory and Applications   [Spring 2021]
  - Multiple Instructor
- C# Programming for Unity Game Development (4 courses)   [Winter 2020-1]
  - Instructor: Dr. Tim Chamillard (University of Colorado System)
- MIT 9.11: The Human Brain   [Fall 2020]
  - Instructor: Prof. Nancy Kanwisher (Massachusetts Institute of Technology)
- Neuroscience   [Fall 2019, Summer 2020]
  - Instructor: Prof. Mohsin Reza Heidari (Amirkabir University)
- Virtual Reality   [Summer 2019]
  - Instructor: Prof. Steven M. LaValle (University of Illinois at Urbana-Champaign)
- SYDE 522 Machine Intelligence   [Winter 2018-9]
  - Instructor: Dr. Hamid R. Tizhoosh (University of Waterloo)

    Online Courses

- Linear algebra with Python
- The Complete Python Bootcamp 2020
- Python Object-Oriented Programming
- Master Math by Coding in Python
- Master statistics and machine learning
- Machine Learning: Python In Data Science
- Unreal Engine C++ Developer
- Learn C++ Programming: Deep Dive in C++
- Master Python Programming by solving scientific projects
- Git Complete
- Learning How to Learn

COMPUTER SKILLS

Programming/Scripting

- Python
  - Tensorflow
  - Pytorch
  - Sklearn
  - Pandas
  - Numpy, Matplotlib
- MySQL
- C/C++
- JavaScript
- HTML5/CSS3
- LaTeX

IDEs/Tools

- VSCode
- PyCharm
- CLion
- Sublime Text
- MATLAB
- Unity3D
- Unreal Engine 4
- Altium Designer 20

TEACHING EXPERIENCES

o Teaching Assistant
  - Machine Learning   Summer 2020
    · Instructor: Farrokh Karimi (IPM Institute For Research In Fundamental Sciences)
  - Computer Vision   Winter 2019-0
    · Instructor: Farrokh Karimi (Sharif University Of Technology)
  - Python Programming Language   Summer 2019
    · Instructor: Mohsin Reza Heidari (Amirkabir University)