S. PARISA DAJKHOSH

Personal Information

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PARISA-DAJ
PARISA_DAJ

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Education

B.Sc. (Among the top three highest ranked universities in Iran) *Sep 2013- Feb 2018*

Amirkabir University of Technology (Tehran Polytechnic)

Electrical Engineering, major in Control

Privileged Entry (one of the **top 10** entry students)

Thesis Title: "Indoor Autonomous Landing of a Quadrotor with Video Processing"

- Thesis Supervisor: Dr. F. Abdollahii **100/100**

  Internship Course: " Design and Program an Electronic Board for Autonomous Flight of a Quadcopter"
- Advisor: Dr. M. A. Khosraviii **95/100**

High School Diploma *Sep 2006- July 2013*

National Organization for Development of Exceptional Talents

- Mathematics and Physics, GPA: **99.35/100 (4/4)**
- **Ranked 357** (among top 0.2%) in the nationwide university entrance exam

Research Experience

Sep 2016 – present
Computer and Programming Teacher
Jul 2013 – Jul 17
Robotics Teacher

Farzanegan 1 Junior High School

- Teach fundamentals of analog and digital *circuits*.
- Teach fundamentals of Mechanics of a robot.
- Teach programming using *QT, C, C++, Python 3, Small Basic, Game Maker*, *Scratch*, etc.

  For instance:
  - *Neural Network* Asteroids *Classifier* in Python 3 using *Keras*.
  - Snake and Ladder Game in QT.
  - Hangman Game in QT.
  - Student Schedule Manager App in C++.
  - Snake Game in QT.
  - Color Blindness Detector App in Small Basic.
  - Quiz Game App in Small Basic.
- Teach research methods and report writing in Microsoft Word and PowerPoint.
- Teach the basics of Microsoft Excel.
- Teach fundamentals of Internet and its security.
- Teach *algorithm and flowchart*.
- Hold *graph theory* workshop.

June 2020
Workshop Instructor

Sharif Business Summer School | Sharif University of Technology

- Teach *Python* from basics to *object-oriented* programming
- Practical Course with assignments and a project

Jan 2019-Jan 2020 **RA**	**Institute for Brain and Cognitive Science | Shahid Beheshti University** • Build *Human-Computer Interface* for cyber ball & Iowa gambling task in *Python* for checking patient rejection effect on risk-taking ability under supervision of Dr. Borhani[iii] • Planning to submit a paper on this topic.
Feb 2018 – Aug 2019 **Lab Financial Manager** Sep 2016 – Sep 2018 **RA and Control Team Member**	**CMVS Lab[1] | AUT[2]** This project is considered as the thesis project course. The goal is to control a quadcopter and land it on a specific landing station using vision. • Test the functionality of *BeagleBone Black* to use for video processing. • Video processing with a camera connected to a *Raspberry pi* in *python* and *C++* using *OpenCV* and *ARUCO* markers. • Design separate *PID controller* for each of quadcopter's degree of freedom. • Connecting C++ code to Matlab and control the UAV[3] on Matlab, Simulink.
Sep 2018-Jan 2019 **Workshop Instructor**	**Science Students Council | AUT** • Teaching *FPGA* from basic to full implementation (*Verilog*) • Practical Course with assignments and a project
Apr 2018- Sep 2019 **RA and Lab Instructor** Sep 2017- Jan 2018 **TA**	**Computational Intelligence Course | AUT** Course Instructor: Dr. F. Abdollahi • Help to implement *Fuzzy systems* and *Neural Networks* in *Matlab* including modeling and control of a system, classification, regression and clustering, multilayered perceptron trained with backpropagation, and machine learning. • Adjust the lesson plan for the Computational Intelligence lab course. • Research on the full control system and modeling of a UGV [4] using computational intelligence and full implementation of the lesson plan on the vehicle

Jun 2015 – Jun 2016
RA and Electronics Team Leader
Jan 2013 – Jun 2015
RA and Electronics Team Member
	Parsian Robotics Lab | AUT
	• Small Size Soccer League:
	  ○ *Boost DC to DC converter* design (Converting 16.8 v to 200 v)
	  ○ Design a Two-way communication circuit using NRF module (*wireless communication* between robot and computer)
	  ○ Programming *FPGA* and *ATXmega*
	  ○ Full implementation of a microprocessor inside FPGA
	  ○ Mirosot Soccer League:
	  ○ Design the processor board (using FPGA) and the motor controller board
	• Quadcopter:
	This project is considered as an internship course. The goal was to convert a handy controlled quadcopter to an autonomous robot.
	• Design a board which contains the following:
	  ○ Processor (*ATXmega*)
	  ○ Motor drivers (connected to *PWM*)
	  ○ IMU: gyroscope, magnetometer, and accelerometer (*I2C*)
	  ○ Two-way communication using NRF module (*SPI*)
	  ○ Vision using a distance sensor and an analog camera
	  ○ OLED display (connected to I2C)

[1] Control of Multi-Vehicle Systems Lab
[2] Amirkabir University of Technology
[3] Unmanned Aerial Vehicle
[4] Unmanned Ground Vehicle

Jul 2013 – Jan 14 **TA** Sep 2009 – Mar 2012 **RA and Team Leader**	**Farzanegan 1 High School** • Full implementation of electronics, mechanics, and programming for a junior path follower and both forward and goalie robots in lightweight and open weight junior soccer, using *ATmega16, IR receiver, and transmitter sensors*.
Sep 2019 – Jan 2020 **Computer and Programming Teacher**	**Edalat Elementary School** • Providing friendly environment for children, using *Choice Theory in the Classroom*[5] techniques. • Teach fundamentals of ICDL using *kid-friendly methods* like methods mentioned by Linda Liukas[6] in her books. • Teach basics of programming and algorithmic thinking using Scratch, Lightbot, 7 billion humans, etc.
2011 – present **Tutoring**	• Teach Robotics, Physics, Mathematics, ICDL, Game Maker, Scratch, QT, C++, C, Python 3, Altium Designer, and so on.

Awards and Honors

ISSUE	EVENT	EVENT PLACE	SUBJECT	YEAR
1st place	International AUTCUP Competitions International **Khwarizmi** Competition	AUT	Junior soccer 1*1 robot	10
TDP[7] and Participation	International RoboCup IranOpen Competition	QIAU[8]	Various Junior Robotics Leaugues	10 11
4th place Poster and Presentation	International Individual and Superteam RoboCup Competition	Turkey	Junior soccer 2*2 open weight robot	11
3rd place	International RoboCup IranOpen Competition	QIAU	Junior soccer 2*2 lightweight robot	12
OC[9] & Referee	Nationwide Farzcup Competition	Farzanegan I		12,13,14
Team Leader	International RoboCup IranOpen Competition	QIAU	Junior Rescue Robots	14
TDP	RoboCup Competition	Brazil	Senior soccer SSL[10]	14
Participation	International RoboCup IranOpen Competition	QIAU	Senior soccer SSL	15, 16
TDP and Participation	RoboCup Competition	China	Senior soccer SSL	15
1st place	International AUTCUP Competition	AUT	Senior Mirosot soccer	16
TDP	RoboCup Competition	Germany	Senior soccer SSL	16
Referee	NODET Young Researchers' Festival	Allameh Helli	Engineering and Technology	18

Languages

- Persian: Native
- English: Fluent (GRE April 3, 2019)
  - Writing: 4
  - Quantitative Reasoning: 168
  - Verbal Reasoning: 144
- French: Intermediate (A2)

[5] Choice Theory in the Classroom: by Dr. William Glasser
[6] Linda Liukas: Children's Book Author
[7] Technical Description Paper
[8] Qazvin Islamic Azad University
[9] Organization Committee
[10] Small Size League

Selected Courses

Course Name	Project/Presentation Issue	Grade
Computer Programming	Use *OpenGL* in visual studio. Dr. Pour Mohammad	A
Technical English	Present about the electronics of SSL Robots. Prof. Sadeghi	A
Research Methods & Report Writing	An Introduction to Holograms. Dr. F. Abdollahi Attendance and preparation of an essay in the field of cognitive engineering.	A+
Logic Circuits Lab	Full Implementation of a *CPLD*, using *Verilog* in *XILINX ISE* Dr. Rezaei	A+
Electronic Measurement	Design a student-professor user interface using a *UDP* protocol in *LabVIEW*. Dr. Rezaei	A
Linear Control Systems	Modeling and position control of a servo motor. Dr. Rasti	A
Computational Intelligence	Modeling and *Fuzzy Control* of an Autonomous Car in *Matlab*. Dr. F. Abdollahi	A
Modern Control	Modeling and 2D Control of a robot manipulator in *Matlab*. Dr. Atrianfar	A+
Advanced Programming	Simulate FDTD Electromagnetic wave spread using *C++* and *Python* with *Qt* graphics creator. Dr. A. Jahanshahi	A
Digital Control Lab	Wireless Control of a UGV and Servo Motors of a flexible arm using *Raspberry Pi* and *Wi-Fi module* connected via *Serial Port* (IOT). Dr. Sharifi	A+
Microprocessor Lab	Full Implementation of an *ARM Cortex M4*, using *C* in *STMCube* and *Keil uVision*	A+
Instrumentation Lab	Full Implementation of an *AVR ATMega16*, using *C* in *CodeVision*	A+
Industrial Control Lab	Control a product line implemented on *PLCs*, using ladder and function block diagram.	A+
AVR microcontrollers	Science Students Council Course at Amirkabir University	-
Graph Algorithm	Online Course at EDX – UCSanDiego	-
Reinforcement Learning	Winter School at Shahid Beheshti University	-
Deep Learning with TensorFlow	Online Course at Coursera - deeplearning.ai: Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning	-

Skills

Programming Languages	Hardware	computer programs	other skills
• Python 3 • C++ • C • MatLab • Verilog HDL • Arm Assembly • Arduino	• FPGA • CPLD • Atmel AVR • ARM	• Simulink • Altium Designer • QT Designer • XILINX ISE • Latex • Proteus • CodeVision AVR	• Embedded Systems • Real-Time Systems • Machine Learning • Artificial Intelligence • Controller Design • IOT • Digital Circuit Design • Linux • Teaching

Hobbies & Interests

- Philosophy, Literature, Doing Sports, Travelling.
- Programming for fun at Hacker Rank
- animal rescue NGOs.

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[i] Dr. Abdollahi: Associate Professor of Electrical Engineering, University of Amirkabir, fabdollahi@aut.ac.ir

[ii] Dr. Khosravi: Assistant Professor of Electrical Engineering, University of Amirkabir, m.a.khosravi@aut.ac.ir

[iii] Dr. Borhani: Assistant Professor of Cognitive and Brain Sciences, University of Shahid Beheshti, kh_borhani@sbu.ac.ir