Golnaz Baghdadi

Biomedical Engineer

Interests and proficiencies

- Signal processing (EEG, ECG, EMG, PPG, EOG, neural recording)
- Machine learning in medicine and healthcare
- Computational Cognitive Neuroscience
- Computational Modeling of Biological Systems

Language

Persian ●●●●●
English ●●●●○

Scholar

https://scholar.google.com/citations?user=k5NpIOEAAAAJ&hl=en

Contact

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🏛 Biomedical Engineering Department, Amirkabir University of Technology, Tehran, Iran.

in www.linkedin.com/in/golnaz-baghdadi-0bb4b9119

EDUCATION

PhD, Biomedical Engineering (Bioelectric), Amirkabir University of Technology, Tehran, Iran 2011-2017
- Thesis title: **Computational modeling of the human attention control system and investigating its disorder in ADD children**
- Supervisor: Prof. Farzad Towhidkhah

Master of Science, Biomedical Engineering (Bioelectric), Shahed University, Tehran, Iran 2006-2009
- Thesis title: **EEG based Hypnosis Depth Determination, Using Empirical Mode Decomposition**
- Supervisor: Prof. Ali Motie Nasrabadi

Bachelor of Science, Biomedical Engineering, Shahed University, Tehran, Iran 2001-2005
- Thesis title: **Design and Implementation of an Eye Movement-based Mouse Cursor Controller using Optical Method**.
- Supervisor: Prof. Ali Motie Nasrabadi

PROFESSIONAL EXPERIENCES

Faculty member Amirkabir Unversity of Technology, Department of Bimedical Engineering (2023-current).

- Teaching undergraduate/graduate courses in bioelectric and neuro-cognitive engineering
- Conducting research in the field of neuro-cognitive engineering
- Mentoring students in research projects and academic pursuits
- Publishing research findings in peer-reviewed journals
- Securing funding/grants for research projects.

Skills: **Teaching; Leadership; Teamwork; Communication; Critical Thinking; Problem Solving; Organizational and Time Management**

Artificial intelligence and product development team manager in Radial, Jahan Ghalb Azmoon Co., working on developing predictive models of blood pressure in cuff less ambulatory blood pressure monitoring systems (2022-2024).

- Processing of biological signals (ECG and PPG) and non-biological signals (IMU and FSR)
- Analyzing human data, including demographic information
- Developing predictive models (both Shallow and Deep models) for blood pressure estimation
- Managing and coordinating teams involved in signal processing and AI
- Collaborating closely with hardware and data gathering teams

Skills: **Signal Processing; Machine Learning; Deep Learning; Leadership; Teamwork; Communication; Critical Thinkning; Problem Solving;**

Senior researcher and software developer in ML, BONDA innovation center, "freqqquency" start-up, working on EEG-based assistive and diagnostic technologies (2021-2022).

- EEG signal processing (Linear and Nonlinear algorithms)
- Implementing machine learning techniques in MATLAB and Python.
- Exploring new applications, software, or technologies for EEG-based Alzheimer's diagnosis systems and driver drowsiness detection.
- Collaborating with both back-end and front-end software development teams

Skills: **Signal Processing; Machine Learning; Research & development**

Postdoc researcher, Biomedical Engineering (Bioelectric), Amirkabir University of Technology, Tehran, Iran 2017-2019

Title**: Computational cognitive-neuroscience focusing on human attention system**

- Preparation of master's neuro-cognitive engineering programs as a branch of biomedical engineering.
- Playing a role in updating the undergraduate and graduate programs in biomedical engineering.
- Coordinating and advising graduate and undergraduate students working on projects related to human attention system
- Assisting students in designing their neurocognitive tasks and experiments.

Skills: **Signal Processing; Machine Learning; Experiment Design**

Postdoc researcher, Iran National Science Foundation, Tehran, Iran and Kermanshah University of Medical Sciences, Kermanshah, Iran, 2017-2018

Title**: Effects of tactile stimuli on nonlinear characteristics of EEG signals**

- Developing nonlinear algorithms in EEG signal processing
- Developing machine learning techniques for EEG-based detection of roughness levels touched by humans.
- Coordinating and advising graduate and undergraduate students working on this project

Skills: **Signal Processing; Machine Learning**

Laboratory management Cybernetic and modelling biological systems laboratory, Biomedical engineering department, Amirkabir University of Technology, Tehran, Iran, 2013-2017

- Management of teams, experiments, and equipment at the Lab.
- Coordinating and advising graduate and undergraduate students in their projects on computational modelling of neurocognitive systems.

Skills: **Computational Modeling of Neurocognitive System; Leadership**

Medical Equipment Expert Department of Technology and Equipment of Shahed University, Tehran, Iran, Feb. 2006- June 2006

- Investigating the features of medical equipment purchased for hospitals under the supervision of the university
- Developing software to manage and control existing equipment and purchases.

Skills: **Research; Windows app development (Visual Basic)**

TEACHING EXPERIENCE

Professor: Biomedical Engineering Department, Amirkabir University of Technology, Tehran, Iran
(Winter 2023-currect)

- o Introduction to biomedical engineering (BS)
- o Physiology of brain and cognition (MS and PhD)

Visiting Professor: Biomedical Engineering Department, Amirkabir University of Technology, Tehran, Iran
(Fall 2020-Spring 2021)

- o Recording and analysis of biological signals (BS)
- o Physiology of brain and cognition (MS and PhD)

Visiting Professor: Electronic and Computer Department, Shahid Beheshti University, Tehran, Iran
(Fall 2020-Spring 2021)

- o Principles and tools of rehabilitation (BS)
- o Electrical safety in hospital (BS)
- o Medical equipment (BS)

Visiting Professor: Electronic, and Computer Engineering Department, Islamic Azad University of North Tehran, Iran
(Fall 2019-Spring 2020)

- o Dynamical systems in neuroscience (MS)
- o Biological signal processing and control (MS)

Teaching Assistant: Biomedical Engineering Department, Amirkabir University of Technology, Tehran, Iran
(Fall 2012- Summer 2016)

- o Application of Information Technology in Medicine (E-learning) (MS)
- o Numerical Method in Medicine (E-learning) (MS)
- o Intelligent System in Medicine (E-learning) (MS)
- o Probability and Statistics in Medicine (MS and PhD)
- o Model Predictive Control (With Prof. Farzad Towhidkhah) (MS and PhD)
- o Biological System Modelling (MS and PhD)

Visiting Professor: Engineering Department, Islamic Azad University of Shahr-Qods, Tehran, Iran
(Fall 2010- Summer 2012)

- o Microprocessor
- o Microcontroller
- o Electronic (1)
- o Instrumentation and control
- o Electronic Laboratory (1)
- o Computer Applications in Electronics
- o Linear Integrated Circuit

Teaching in several workshops:

- o EEG signals processing in MATLAB and EEGLab toolbox
- o Advanced methods in EEG signals processing
- o EEG signal processing and deep models
- o Research Methods and Experiment Design in Neurocognitive Science
- o EEG-based experiment design course in brain studies: from basic principles to different project ideas and future direction Artificial neural network
- o EEG recording and brain mapping
- o Introduction to Machine Learning Algorithms in MATLAB
- o Electrical brain stimulation
- o An Introduction to Human Attention Control System: from the neurocognitive and computational perspective
- o MATLAB programming in biomedical engineering
- o Data mining technique

RESEARCH AND SEMI-INDUSTRIAL PROJECTS

2023: Neuromatch Deep Learning Neuroscience Academy Project

Project: **Decoding Animal Behaviours from Spontaneous Activity of Visual Cortex Using Deep Learning**
Team members**:** Golnaz Baghdadi, Amit Kumar, Julia Suzuki, Arman Rezayati

2022: Neuromatch Computational Neuroscience Academy Project

Project: **Comparing the Performance of GLM and Deep Learning Models for Predicting Mice Pupil Area from V1-Neural Signals**
Team members: Golnaz Baghdadi, Facundo Emina, Reagan Bullins, Haorui Sun, Mohammad Yaghoubi

2017-2019: (Main Research Assistant)

Project: **Designing, Manufacturing, and assessment of multichannel and High Definition (HD) transcranial direct current stimulation (HD-tECS) device**

Founder: Cognitive Sciences and Technologies Council of Iran, Cybernetics and Modelling of Biological System Lab, Biomedical Engineering Department, Amirkabir university of technology, Tehran, Iran
Supervisor: Prof. Farzad Towhidkhah

My main duties included:
- exploring non-invasive brain stimulation technologies and their features
- collaborating with the hardware and electronics team
- designing and implementing appropriate experiments to examine the performance of the device and conducting statistical analysis of behavioral data.
- Writing reports and preparing presentation files

2016-2017: (Main Research Assistant)

Project: **Designing, Manufacturing, and Clinical Feasibility Assessment of a Test Sample of Transcranial Direct & Alternative Current Stimulator (tECS) Programmable with PC**

Founder: Cognitive Sciences and Technologies Council of Iran, Cybernetics and Modelling of Biological System Lab, Biomedical Engineering Department, Amirkabir university of technology, Tehran, Iran
Supervisor: Prof. Farzad Towhidkhah

My main duties included:
- exploring non-invasive brain stimulation technologies and their features.
- collaborating with the hardware and electronics team
- designing and implementing appropriate experiments to examine the performance of the device and conducting statistical analysis of behavioral data.
- writing reports, preparing presentation files, and introducing the feature of the manufactured device to physicians

2010-2011: (Main Research Assistant)

Project: **Design and Implementation of Real-Time EEG Signal Processing Setup for a 24 Channels Recording System**

Founder: Biomedical Engineering Group, Engineering Department, Shahed University, Tehran, Iran
Supervisor: Dr. Ali Motie Nasrabadi

My main duties included:
- designing appropriate protocols for preprocessing, feature extraction, and real-time feedback
- writing programs in Visual C++ for signal processing and GUIs
- analysis and evaluation of results
- writing reports and preparing presentation files

2007-2008: (Main Research Assistant)

Project: **Design and Implementation of Typing System that is controlled by the Eye Movement**

Founder: Biomedical Engineering Group, Engineering Department, Shahed University, Tehran, Iran
Supervisor: Dr. Ali Motie Nasrabadi

My main duties included:
- designing and implementing the hardware
- writing programs for the microcontroller
- writing programs in Visual Basic for data analysis and GUIs
- analysis and evaluation of results

PUBLICATIONS

Books:

[1]. **Golnaz Baghdadi**, Farzad Towhidkhah, Mojdeh Rajabi, "Neurocognitive Mechanisms of Attention: Computational Models, Physiology, and Disease States", *Elsevier Publisher*, 2021 (In English)

[2]. Ali Motie Narabadi, **Golnaz Baghdadi,** "Chaos and Nonlinear Dynamics: Systems Analysis and Signal Quantification", *Shehed University Publisher*, 2021 (In Persian)

[3]. Farzad Towhidkhah, **Golnaz Baghdadi**, "Biological Systems Modelling", Jahad Amirkabir University of Technology Publisher, 2021 (In Persian)

[4]. Farzad Towhidkhah, Yeganeh Mohammad Ali Margi, Nasim Lahimgarzadeh, **Golnaz Baghdadi**, "Modeling and control of neuromuscular systems", *Amirkabir University of Technology Publisher*, 2021 (In Persian)

[5]. Farzad Towhidkhah, **Golnaz Baghdadi**, "Model Predictive Control and its Application in Biomedical Engineering", *Amirkabir University of Technology Publisher*, 2018 (In Persian)

Journals:

[1]. Soraya Rahimi, Farzad Towhidkhah, **Golnaz Baghdadi**, Bijan Forogh, Payam Saadat, Ghazaleh Soleimani, and Seyed Amirhassan Habibi. (2023) Modeling of cerebellar transcranial electrical stimulation effects on hand tremor in Parkinson's disease. *Frontiers in Aging Neuroscience* 15: 1187157.

[2]. **Golnaz Baghdadi**, Chella Kamarajan, and Fatemeh Hadaeghi. (2023) Editorial: Role of brain oscillations in neurocognitive control systems. *Frontiers in Systems Neuroscience*, 17, 1182496.

[3]. Nasrin Sheibani Asl, **Golnaz Baghdadi**, Serajeddin Ebrahimian, and Sahar Javaher Haghighi. (2022) Toward Applicable EEG-Based Drowsiness Detection Systems: A Review. *Frontiers in Biomedical Technologies*. 9(4): 323-350.

[4]. Maryam Moghadam, Farzad Towhidkhah, and **Golnaz Baghdadi**. (2021) A cognitive model of spatial navigation: Hippocampus and Prefrontal cortex interaction. *Iranian Journal of Biomedical Engineering*.15(2): 111-120.

[5]. **Golnaz Baghdadi**, Mahmood Amiri. (2021) Detection of static, dynamic, and no tactile friction based on nonlinear dynamics of EEG signals: A preliminary study. *Chaos, Solitons & Fractals*, 142:110449.

[6]. **Golnaz Baghdadi**, Mahmood Amiri, Egidio Falotico, Cecilia Laschi. (2020) Recurrence quantification analysis of EEG signals for tactile roughness discrimination, *International Journal of Machine Learning and Cybernetics,* 12: 1115–1136.

[7]. **Golnaz Baghdadi**, Ateyeh Soroush, Farzad Towhidkhah, and Reza Rostami. (2020) Using the Concepts of Time-delayed Feedback Control in Biofeedback Systems in Children with ADD: A Preliminary Study. *Communications in Nonlinear Science and Numerical Simulation*: 85: 105235.

[8]. **Golnaz Baghdadi**, Farzad Towhidkhah, Reza Rostami (2019) A mathematical model of the interaction between bottom-up and top-down attention controllers in response to a target and a distractor in human beings. *Cognitive Systems Research*, 58: 234-252.

[9]. Mohammadreza Khodashenas, **Golnaz Baghdadi**, Farzad Towhidkhah (2019). A modified Hodgkin–Huxley model to show the effect of motor cortex stimulation on the trigeminal neuralgia network. The *Journal of Mathematical Neuroscience*, 9(1): 4

[10]. **Golnaz Baghdadi**, Farzad Towhidkhah, Reza Rostami (2018). A Mathematical Model to Mimic the Shape of Event Related Desynchronization/Synchronization. *Journal of Theoretical Biology*. 453: 117-124.

[11]. Reza Kazemi, Reza Rostami, Sanaz Khomami, **Golnaz Baghdadi**, Mehdi Rezaei, Masahiro Hata, Yasunori Aoki, Ryouhei Ishii, Masao Iwase, and Paul B. Fitzgerald (2018). Bilateral transcranial magnetic stimulation on DLPFC changes resting state networks and cognitive function in patients with bipolar depression. *Frontiers in human neuroscience*, 12.

[12]. **Golnaz Baghdadi**, Farzad Towhidkhah, Reza Rostami and Mohsen Raza (2017). Response of the Pre-Oriented Goal-directed Attention to Usual and Unusual Distractors: A Preliminary Study. *Basic and Clinical Neuroscience*, 8(2), 155-165.

[13]. **Golnaz Baghdadi**, Farzad Towhidkhah, Reza Rostami (2017). An electrophysiological model of working memory performance. *Cognitive Systems Research,* 45: 1-16.

[14]. **Golnaz Baghdadi**, Farzad Towhidkhah, Reza Rostami. (2017) A Mathematical and Biological Plausible Model of Decision-Execution Regulation in "Go/No-Go" Tasks: Focusing on the Fronto-Striatal-Thalamic Pathway, Computers *in biology and medicine*, 86: 113-128.

[15]. **Golnaz Baghdadi**, Farzad Towhidkhah, Reza Rostami. (2017) Left and right reaction time differences to the sound intensity in normal and AD/HD children. *International Journal of Pediatric Otorhinolaryngology,* 97: 240-244.

[16]. **Golnaz Baghdadi**, Sajad Jafari, Julien Clinton Sprott, Farzad Towhidkhah, Reza H. Golpayegani, Farzad Towhidkhah. (2014) A chaotic model of sustaining attention problem in attention deficit disorder. *Common Nonlinear Sci Numer Simulat*, 20(1): 174–185.

[17]. **Golnaz Baghdadi**, Ali Motie Nasrabadi. (2012) Comparison of Different EEG Features in Estimation of Hypnosis Susceptibility Level, *Computers in Biology and Medicine*, 42(5): 590-597.

[18]. **Golnaz Baghdadi**, Ali Motie Nasrabadi. (2012) EEG phase synchronization during hypnosis induction, *Journal of Medical Engineering & Technology*, 36(4): 222-229.

[19]. **Golnaz Baghdadi**, Ali Motie Nasrabadi. (2012) Investigating Classification Methods to Improve Eye Tracking Systems Operation, *International Journal of Biomedical Engineering and Technology (IJBET),* 10(2): 145-149.

[20]. **Golnaz Baghdadi**, Ali Motie Nasrabadi. (2010) Classifying Hypnotizable Groups, Using EEG Weighted Regional Frequency", *Scientia Iranica*: Transactions *D: Computer Science and Engineering and Electrical Engineering*, 17(1): 71-80.

[21]. **Golnaz Baghdadi**, Ali Motie Nasrabadi. (2009) An Investigation of Changes in Brain Wave Energy during Hypnosis with Respect to Normal EEG", *Sleep and Hypnosis an International Journal of Sleep, Dream and Hypnosis*, 11(2): 40-45.

Selected Conference Presentations:

[1]. **Golnaz Baghdadi,** Navigating EEG Data Acquisition: From Recording To Brain Mapping, International Neuroscience Conference (Neuro2023), 20-23 October, Tebilisi, Georgia (Oral)

[2]. **Golnaz Baghdadi**, Farzad Towhidkhah, Phase Synchronization in an Oscillatory Network and Response Time Variability during a Sustained Attention Task, The third international symposium on the mathematics of neuroscience, 24th and 25th September 2022, Heraklion, Crete. (Oral)

[3]. Nasrin Sheibani, **Golnaz Baghdadi**, Sahar Javaher Haghighi, Toward Applicable EEG-Based Drowsiness Detection Systems, 5th Iranian Symposium on Brain Mapping Updates, 14-15 July 2021, Tehran, Iran (Oral)

[4]. **Golnaz Baghdadi**, Farzad Towhidkhah, How can networks of coupled oscillatory neurons shape different cognitive functions? 3rd Sharif Neuroscience Symposium, 3-5 Mar. 2021,Tehran, Iran (Oral)

[5]. **Golnaz Baghdadi**, Farzad Towhidkhah, Reza Rostami, Correlation between Different Brain Channels' ERPs in Adults with Attention Deficit Hyperactivity Disorder (ADHD), 6th Basic and Clinical Neuroscience Congress, 20-22 Dec. 2017, Tehran, Iran (Oral)

[6]. **Golnaz Baghdadi**, Farzad Towhidkhah, A Review on Differences Found between Conventional and High Definition tDCS, 6th Basic and Clinical Neuroscience Congress, 20-22 Dec. 2017, Tehran, Iran. (Poster)

[7]. **Golnaz Baghdadi**, Farzad Towhidkhah, Reza Rostami, the study of the difference between normal and attention-deficit/ hyperactivity disorder children based on extraction of computational indices from eye movement signals and their modelling, 8th Iranian Cognitive neuropsychology symposium, 22-24 Nov. 2017, Tehran, Iran (Oral)

[8]. **Golnaz Baghdadi**, Farzad Towhidkhah, R. Rostami, A Model of Sequential Prediction in the Brain using an Oscillatory Network, The 19th CSI International Symposium on Artificial Intelligence and Signal Processing (AISP), 25-27 Oct. 2017, Shiraz, Iran (Oral)

[9]. **Golnaz Baghdadi**, Farzad Towhidkhah, Reza Rostami, Investigating the EEG Embedding Dimension During a Visual Attention Task, 6th International Conference of Cognitive Science, 27-29 Apr. 2015, Tehran, Iran (Oral)

[10]. **Golnaz Baghdadi**, Farzad Towhidkhah, Reza Rostami, A Computational Model of Brain Function During Integrated Visual and Auditory Continuous Performance Test, 3rd Basic and Clinical Neuroscience Congress, 29-31 Oct. 2014, Tehran, Iran (Poster)

[11]. **Golnaz Baghdadi**, Ali Motie Nasrabadi, Hypnosis Depth Determination, Using Empirical Mode Decomposition, The First International Congress On Clinical Hypnosis and Related Sciences, 26-28 Apr. 2012, Mashhad University of Medical Sciences, Iran (Oral)

[12]. **Golnaz Baghdadi**, Ali Motie Nasrabadi, EEG Microstate Analysis in High and Low Hypnotizable Groups, Using Cluster-Time Map, 18th Iranian Conferences on Electrical Engineering, 11-13 May 2010, the Isfahan University of Technology, Iran (Oral)

[13]. **Golnaz Baghdadi**, Ali Motie Nasrabadi, Trance Depth estimation during Hypnosis Induction, Using Cluster-Time Map, 16th Iranian Conferences on Biomedical Engineering, 28-31 Dec. 2009, Tehran University of Medical Sciences, Iran (Oral)

[14]. **Golnaz Baghdadi**, Ali Motie Nasrabadi, Estimating Final Depth of Hypnosis from EEG, Implementing Fractal Features and EMD Algorithm, 17th Iranian Conferences on Electrical Engineering, 13-15 July 2009, Iran University of Science and Technology, Iran (Oral)

[15]. **Golnaz Baghdadi**, Mohammad Mikaeeli, Utilization of Support Vector Regression Machine in Blood Glucose Level Prediction in Diabetics, 15th Iranian Conferences on Biomedical Engineering, 12-13 Feb. 2008, the Islamic Azad University of Mashhad, Iran (Oral)

[16]. **Golnaz Baghdadi**, Ali Motie Nasrabadi, Investigation of Two Fuzzy and Fuzzy-Chaotic Model in Blood Glucose Level Prediction in Diabetics, 2th Joint Congress on Fuzzy and Intelligent Systems, 28-30 Oct. 2008, the Malek-Ashtar University of Technology, Iran (Oral)

[17]. **Golnaz Baghdadi**, Ali Motie Nasrabadi, Controlling Blood Glucose Levels in Diabetics by Neural Network Predictor, 29th Annual International Conference of the IEEE EMBS, 23-26 Aug. 2007, Lyon, France (Poster)

[18]. **Golnaz Baghdadi**, Ali Motie Nasrabadi, Control of Mouse Courser movements by Eye movements tracking, 13th Iranian Conferences on Biomedical Engineering, 21-22 Feb. 2007, Sharif University of Technology, Iran (Oral)

PATENTS and AWARDS

2017: Award of best thesis from the Iranian Medical Engineering Society at 24th national and 2nd international Iranian conference on biomedical engineering, Tehran, Iran.

2016: Award of best presentation proposal in 1st Iranian IBRO/APRC School of Cognitive Neuroscience on Human Brain Mapping.

2013: Research grant, PhD thesis support, Cognitive Science, and Technologies Council (CSTC), 2013, Financial support of PhD thesis in the field of neurocognitive science.

2011: Technology and Innovation Award for the best work of 5th International Digital Media Fair & Festival, for the Eye Movement-based Mouse Cursor Controller System

2008: Typing System that is controlled by Eye Movement, Industrial Property General Office (ID 48056)

2008: Eye Movement-based Mouse Cursor Controller System, Industrial Property General Office (ID 48046)

MENTORSHIP

Project Advisor for Biomedical engineering program, Computational cognitive neuroscience field

- BS. (10 students) Amirkabir University of Technology, Tehran, Iran
- MSc. (8 students) Amirkabir University of Technology, Tehran, Iran

EDITORIAL AND REVIEWER ROLES

- Guest Associate Editor in Frontiers in Systems Neuroscience (Editors of two research topics)
- Reviewer of Iran Nationa Scinece Foundation (INSF)
- Review Editor in Learning and Memory
- Journal Reviewer
  - Biomedical Signal Processing and Control
  - Annals of Biomedical Engineering
  - Clinical EEG and Neuroscience
  - Journal of Attention Disorders
  - Computers in Biology and Medicine
  - Medical& Biological Engineering & Computing
  - Chaos
  - Frontiers in Biomedical Technology
  - Cognitive system research

TECHNICAL SKILLS

- ❖ **Signal processing**
  - Preprocessing and noise removal
  - Statistical features
  - Frequency and time-frequency analysis
  - Chaotic and nonlinear processing
- ❖ **Machine learning**
  - Feature selection
  - Dimension reduction
  - Classification
  - Regression
  - Clustering
- ❖ **Deep learning**
  - Linear deep learning
  - Deep multi-layer perceptron
  - Recurrent neural networks (RNN)
  - Convolutional neural networks (CNN)
  - Regularization techniques
  - Generative models
  - Attention based models
  - Transformers
- ❖ **Data visualization**
- ❖ **Statistical analysis**
  - Prism
- ❖ **Experiment design**
  - Designing tasks and experiments for neuro-cognitive studies
- ❖ **MATLAB**
  - Signal processing
  - Machine learning
- ❖ **Python**
  - MNE
  - Scikit-learn
  - Scipy
  - Pytoch
  - Keras
  - PsychoPy
  - Numpy
  - Matplotlib
- ❖ **Visual C#, C++**
- ❖ **Git version control**

SELECTED ATTENDED WORKSHOPS and TRAINING

- **February 22-23, 2024** Reinforcement Learning, School of Cognitive Sciences SNS 2024 Workshop
- **February 1-2, 2024** Machine Learning in Neuroscience: from Pre-processing Neural Data to Disease Diagnosis, School of Cognitive Sciences SNS 2024 Workshop
- **July 10-30, 2023** Deep Learning, Neuromatch Academy
- **July 2023** Introduction to Machine Learning: Supervised Learning, University of Colorado and offered through Coursera
- **December 2022** Computational Neuroscience, a MOOC from the University of Washington and offered through Coursera
- **July 10-30, 2022** Computational Neuroscience, Neuromatch Academy
- **April 12-21, 2021** the virtual BCI & Neurotechnology Spring School, g.tec company
- **November 24, 2021** EEG artefact types and handling strategies in Brain Vision Analyzer 2, Brain product company
- **November 2020** Virtual Reality in Neuromodulation and Beyond, National Brain Mapping Lab, Tehran, Iran
- **Sep 23- Oct 4, 2016,** 1st Iranian IBRO/APRC School of Cognitive Neuroscience on Human Brain Mapping.
- **December 2014 - April 2015:** Scientific writing and communication skills course, Baqiyatallah hospital, Tehran, Iran