Erfan Baradarantohidi

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https://erfan7bt.github.io/

Education

- **University of Tehran** Sep. 2014 - Sep. 2019
  Engineering Science, B.Sc. *with a minor in* ***Optimization*** *Tehran, Iran*
  Major Courses: *Data Mining, Dynamical Programming, Machine Learning Algorithms, Quantum Algorithms and Computation, Elementary Decision Theory, Optimized Combinotorial Algorithms, Data Structure, Advanced Programming*
- **Technische Universität Berlin** Oct. 2021 - Expected Sep. 2024
  Scientific Computing M.Sc. *Berlin, Germany*
  Major Courses: *Models of Higher Brain Function, Models of Biological Neural Networks, Stochastic Processes In Neuroscience, Machine Intelligence I and II, Control Theory, Numerical Linear Algebra, Scientific Computing*

Skills Summary

Programming: C++, Python, JavaScript(React Native), Git, Julia, MATLAB/Simulink, R
Software: Arduino, Code Vision, Atmel Studio , Microsoft Office
Language: Farsi: native, **English**: fluent, **German**: beginner, **Arabic**: beginner
Soft Skills: Leadership, Event Management, Team Management

Experiences

- **Max Planck Institute for Human Development** April. 2023 - Present
  Student Research Assistant *Berlin, Germany*
  - **Analyzing human physical reasoning and strategy exploration on physical puzzles** Cluster of Excellence, Science of Intelligence -Project 30
- **Institute of Energy Technology, TU Berlin** Dec. 2017 - Feb. 2018
  Intern *Berlin, Germany*
  - **Modeling of the thermal response of temperature sensor,** Clamp on temperature sensor Simulated by OpenModelica; Assisting Research on chipset build-up of non-intrusive Ultrasonic flow meter
- **Epapa** Oct. 2022 - Present
  Co-Founder *Berlin, Germany*
  - **Elearning Platform, Berliner Startup Stipendium Scholorship holder**
    Mobile developer and Generative AI Consultant
- **IAESTE** June 2016 - June 2019
  Member of committee, Mentor, Exchange Coordinator *Tehran, Iran*
  - The International Association for the Exchange of Students for Technical Experience
- **College of Engineering, University of Tehran** Sep. 2018 - Sep. 2019
  Tutor *Tehran,Iran*
  - **Teacher Assistant and Tutor,** Calculus I, Dynamical Systems
- **National Brain Mapping Lab** Nov. 2019
  Workshop *Tehran, Iran*
  - The theoretical and practical Workshop on "MRI Principles and Its Applications in Functional Neuroimaging"

Projects

NSA (a Novel Heuristic Optimization Algorithm)
- Inspired by dynamics of Non-Linear Spring, a population based heuristic algorithm was suggested
- As a part of bachelor project, Implemented on Matlab and compared with recent heuristic approach on a benchmark of numerical global optimization problems

Models of Higher Brain Function
- Series of assignment in different topics in Reinforcement Learning, Decision making, Perceptual Bi-stability and Visual Attention
- Final Project in Decision Making in Low Rank Recurrent Neural Network

Solving Bidomain Model using Voroni Finite Volume Method
- Time-dependent model of propagation of electrical potential waves in myocardium
- Alongside existing literature, selection of Model based on a system of Partial Differential Equations
- Model was implemented and numerically solved using Julia programming language
- Comparing results against test data, Documented all the work thoroughly and presented results to get a full mark on corresponding course

Simulating Double Pendulum using Finite Difference Methods and Conjugate Gradient
- As part of the project for the course; Approximate Methods in Engineering, Numerical solution of double pendulum initial value problem were Implemented and visualized in Python

Bifurcation and Regions of Attraction Analysis
- As the project for the course Dynamical Systems for a sets of ODEs the dynamic behavior of system was studied