Curriculum Vitae (CV)

Masoud Rahimi

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Research Interests

Reinforcement Learning	Deep Learning	Applied Machine Learning
Computational Behavioral Science	Personalization	Game-AI
Cognitive Neuroscience	Cognitive Science	Data Science

Education

- **University of Tehran** — Tehran, Iran
  Master of Science - Control engineering - GPA: 3.53/4.0 — *Sep. 2019 - Present*
  Thesis title: **"Dynamic Difficulty Adjustment through Reinforcement Learning"**
  Thesis publication: In Progress
  Courses: Neural Networks, Pattern Recognition, System Identification, Principles of Cognitive Science, Massive data analysis and systems, Social networks, Nonlinear System Analysis
- **Imam Khomeini International University** — Qazvin, Iran
  Bachelar of Science - Electrical Engineering (Telecommunication) - GPA: 13.42/20 — *Sep. 2014 - July 2019*

Research Experience

- **Research assistant at University of Tehran** — Tehran, Iran
  Advance Robotics and Intelligence Systems Laboratory — *Aug. 2020 - Present*
  - **Dynamic Difficulty Adjustment through Reinforcement Learning in visual-spatial working memory game**:
    - Conducted a systematic review.
    - Interviewed five individuals who played the memory game to determine what made the memory game difficult for them.
    - Developed and implemented feature extraction algorithms for visual-spatial working memory task (VSWMT).
    - Defined a continuous measure of difficulty based on features of VSWMT.
    - Formulated a reinforcement learning problem that produces personalized memory tasks based on users' performance. The RL agent was initially trained in a simulated environment before being fine-tuned in the real world.
    - Implemented the RL-based memory game capturing gameplay and gaze data with an eye tracker in Python.
    - Collected gameplay and questionnaire data from 54 participants while playing the memory game.

Teaching Mentoring Experience

- **Python programming mentor** — Tehran, Iran
  Assisted several master's students in implementing and debugging their theses. — *Sep. 2021 - Des. 2021*
- **Teacher Assistant of Linear Control Course at University of Tehran** — Tehran, Iran
  Prepared quiz answers and graded quiz sheets. — *Sep. 2020 - Feb. 2021*
- **University National Entrance Exam (Konkoor) mentor** — Tehran, Iran
  Provided scheduling and time management advice to Konkoor applicants. — *2019*
- **Student Advisor at High School (part-time)** — Tehran, Iran
  Taught complementary math and physics classes and held motivational counseling sessions. — *Sep. 2014 - May 2015*

Projects

- **Honey memory game**: Implemented a visual-spatial-working-memory game that stores gaze data as well as gameplay data. Tech: Pygame, eye tracker.
- **Control of a mountain car using reinforcement learning (Reinforcement Learning)**: Implemented the actor-critic algorithm from scratch and compared with Stable-baselines3 benchmark. Tech: Python.
- **Analysis of Iran stock market data using MongoDB (Big Data)**: Designed a pipeline for downloading and storing data, then preprocessing and analyzing it. Tech: Pymongo, MongoDB.
- **Analysis of Iran stock market data using Spark (Big Data)**: Preprocessed and analyzed data with Pyspark in Google Collaboratory. Tech: Google Collaboratory, Pyspark (Spark Dataframe, Spark SQL, Spark RDD, Spark GraphX).

- **Inserting data into Cassandra (Big Data)**: Designed appropriate tables to insert data into tables and queried data using cqlsh. Tech: Cassandra, cqlsh bash.
- **Generative Deep Learning (Deep Learning)**: Trained a variational autoencoder (VAE) on MNIST dataset. Tech: Tensorflow, Google Collaboratory.
- **Generative Deep Learning (Deep Learning)**: Trained DCGAN, CGAN and InfoGAN on Cifar10 dataset. Tech: Tensorflow, Google Collaboratory.
- **Real-Time clock implementation (Embedded systems)**: Prototype and analysis of multiple RTC generator circuits.

Skills

- **Programming Languages**: Python, SQL, Matlab, HTML, CSS
- **Python Libraries**: Gym, Stable-baselines3, RLlib, Sklearn, TensorFlow, Keras, Pandas, Numpy, Matplotlib, Pyspark, Pymongo, Snap, NetworkX, igraph, pygame
- **Big data tools**: MongoDB, Cassandra, Elasticsearch, Pyspark, kafka
- **Tools**: GIT, LaTeX, Linux
- **Soft Skills**: Problem Solving, Hard Working, Communication, Team Work, Scheduling, Empathy
- **Language**: English (proficient), Farsi(native)

Test Scores

- **TOEFL**: 92 (reading 27, listening 23, speaking 22, writing 20)

Honors and Awards

- Ranked 2900^{th} among more than *500 000 participants* at the University National Entrance Exam (Konkur).
- Ranked 31^{th} among more than *20 000 participants* at the University National Entrance Exam (Konkur).
- 3^{rd} rank out of 50 students in high school.

Interests and Hobbies

Barbecue, Hiking, Camping
Football tennis, Swimming, Biking, Badminton
Board game, Chess, Backgammon
Coding for fun, Podcast, Movies, and Series

References

- **Hadi Moradi, Full Professor at University of Tehran, School of ECE** Tehran, Iran
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- **Hamed Kebriaei, Associate Professor at University of Tehran, School of ECE** Tehran, Iran
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