

# Curriculum Vitae (CV)

## Masoud Rahimi

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### RESEARCH INTERESTS

Reinforcement Learning	Deep Learning	Applied Machine Learning
Computational Behavioral Science	Personalization	Game-AI
Computational Biology	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
  - Bachelor 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

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

### 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, Antipathy
- **Language:** English (proficient), Farsi(native)

## TEST SCORES

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

## HONORS AND AWARDS

- Ranked *2900<sup>th</sup>* among more than *500 000 participants* at the University National Entrance Exam (Konkur).
- Ranked *31<sup>th</sup>* among more than *20 000 participants* at the University National Entrance Exam (Konkur).
- *3<sup>rd</sup>* 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  
*Email: moradih@ut.ac.ir*
- **Hamed Kebriaei, Associate Professor at University of Tehran, School of ECE** Tehran, Iran  
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