

# Radin Shayanfar

COMPUTER ENGINEERING STUDENT

✉ me@rshayanfar.ir | 🏠 radin-shayanfar.ir | 📷 radinshayanfar | 📍 radinshayanfar

## Research Interests:

Deep Generative Models, Machine Learning for Computer Vision & Speech Recognition, Applications of AI in Information Security, IoT & Software Engineering

## Education

### Amirkabir University of Technology

Tehran, Iran

BACHELOR OF SCIENCE IN COMPUTER ENGINEERING, GPA: 4 / 4, AVERAGE: 19.46 / 20 (132 UNITS PASSED)

Sep. 2018 - Mar. 2023

- Ranked **2nd** among 177 students in total of 8 semesters.
- Relevant Coursework** (\*PASS courses are due to COVID-19):

Computational Intelligence: 20 / 20	Engineering Statistics: PASS*	Data Structures and Algorithms: 20 / 20
Data Mining: 19.5 / 20	Applied Linear Algebra: PASS*	Operating Systems: 19.4 / 20
Artificial Intelligence: 20 / 20	Information Retrieval: 20 / 20	Programming Languages: 20 / 20
Signals and Systems: 20 / 20	Multimedia Systems: 19.5 / 20	Advanced Programming: 20 / 20
Multicore Programming: 19.8 / 20	Web Programming: 20 / 20	

B.Sc. transcript until Jul. 2022: <https://rshayanfar.ir/transcript.pdf>

- Project: **Generating Handwritten Persian Characters with Generative Models**
- Supervisor: Prof. A. Nickabadi

### Allame Helli 3 (National Organization for Development of Exceptional Talents) High School

Tehran, Iran

DIPLOMA IN MATHEMATICS AND PHYSICS, AVERAGE: 19.16 / 20

2014 - 2018

## Skills

<b>Languages</b>	Python, PHP, Java, HTML, CSS, JavaScript, C, $\LaTeX$ , LISP, ML
<b>Web</b>	Laravel, REST API, MySQL, Redis, React, Sass, Flask
<b>DevOps</b>	Docker, Kubernetes
<b>Other</b>	Keras, PyTorch, OpenCV, CUDA, OpenMP, Arduino, Git, Vim, Linux, Server Administration, Photoshop

## Projects

### Generating Handwritten Persian Characters with Generative Models

PYTHON, KERAS, PYTORCH, GENERATIVE MODELS

2022-PRESENT

- Analysis of the recently introduced **generative models** ability to represent and reconstruct individual Persian handwritten characters shape. The models under study are **GAN** and its variations (like **DCGAN** and **WGAN-GP**), **VAE**, and **Real NVP** (Normalizing Flows).
- This is my **BSc. project** under supervision of Prof. A. Nickabadi.

### Information Retrieval Engine

PYTHON

2022

- Implementation of an information retrieval system using Python programming language as part of the university's Information Retrieval course. A **positional inverted index** is utilized at the core of the system.
- The engine can respond to queries in two manners; boolean and ranked. The ranked approach uses a **tf-idf** scoring technique to rank the results.

### Habco

LARAVEL, MYSQL, REDIS, REST API

2021

- Development of a **REST API** for Habco (a Canadian startup) application, a medical application for patients, doctors, pharmacists, and nurses.
- In habco, patients can choose doctors and nurses. The chosen doctors can write prescriptions for the patient and the nurses can write instructions for them. Patients can also send prescriptions to pharmacies and track its status. There's also a drug stock management panel for pharmacists.
- The API is written in PHP, using **Laravel** framework. It uses **SMS code verification** for authentication.

## Music Identification

PYTHON, NUMPY, SIGNALS AND SYSTEMS

Spring 2021

- **Design** and development of a music identification and discovery system using **Fast Fourier Transform** (FFT). The system identifies songs using an audio fingerprint based on songs' **spectrogram**, which is calculated from scratch by windowing the signal's time domain and calculating individual FFTs. The fingerprint is obtained in three steps: 1) filtering out very low and very high frequencies, which probably do not represent the song's prominent properties, 2) binning the frequency-domain of the spectrogram, 3) saving frequencies with maximum magnitude in each bin as the representative frequency of each time slice. The fingerprints of signals are compared using a naïve similarity metric.
- Designed and assigned to students as the Signals and Systems course final project by me as the teaching assistant.

## SamCode Website

PHP, HTML, CSS, BOOTSTRAP, SASS, JAVASCRIPT

2020

- Design and development of SamCode programming contest website (Held by Allameh Helli 3 Junior High School).
- The website uses **Datalife Engine (DLE) CMS** and my work involved design and development of a **new template** for the CMS. The template is created by merging a simple landing page with DLE's default template.

## Captcha Solver

PYTHON, KERAS, OPENCV

2019 - 2020

- Practiced solving CAPTCHA images using **image processing** techniques (using **OpenCV**) and **neural networks** (using **Keras**).
- Achieved 96% accuracy on simple 5-letters CAPTCHAs.

## RJBot

PHP, MYSQL, TELEGRAM BOT API

2019 - 2020

- Development of a Telegram bot for searching and downloading media from the RadioJavan.com website, written in PHP.
- The bot supports almost all types of media such as music, video, album, and podcast.
- Developed for the purpose of training **OOP concepts**.

## Chaladz Design

LARAVEL, MYSQL

2019

- Back-end development of Chaladz Design's online shop, written in Laravel framework.
- The website has admin panel, cart, order tracking, and other regular features of an online shop.

## Jpotify

JAVA, SWING

2019

- Development of a graphical music player, written in Java using Swing library for UI design.
- The player has features like playlists and music sharing with friends over network.

## Konkur98

HTML, JAVASCRIPT, CSS

2017

- Front-end development of a countdown website for Nationwide University Entrance Exam of Iran.

## Ping-Pong Ball Tracker

C++, OPENCV

2014

- Development of a ping-pong game ball tracker using C++ and OpenCV features.

## Ticket to Ride

DELPHI

2013

- Graphical implementation of a 2 players game using Delphi.

## Experience

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### Sharif Data Analytics Lab & National Elites Foundation of Iran

RESEARCH ASSISTANT

Dec. 2021 - Sep. 2022

- Worked on an **Intelligent Voice Commands Recognition** system. Under supervision of **Prof. S. A. Motahari**.
- My main task was the development of a **speaker verification** system, in which the authentication is done by user's voice. For this purpose, I **trained and evaluated** state-of-the-art ECAPA-TDNN model on Common Voice Persian dataset. The model achieved more than 97% accuracy on a **hand-made dataset** consisting of 8400 pair samples.
- I was also in charge of design and development of the system's **web API**, which is utilized in the website (rasam-ai.ir). The API exploits a **microservice** architecture and is written in PHP and Python with Laravel and Flask frameworks respectively.

### SamCode 5

PROGRAMMING CONTEST SCIENTIFIC TEAM MEMBER

Sep. 2020 - Feb. 2021

- Designed problems and test cases for SamCode, a programming contest for junior high school students.

### Ponisha

FREELANCER

2020

- Development of few Telegram applications with Python and Telegram's TDLlib library.

## TEACHING EXPERIENCE

### Teaching Assistant, Computational Intelligence

AMIRKABIR UNIVERSITY OF TECHNOLOGY

Spring 2022

- Under supervision of **Prof. M. Ebadzadeh**
- Designing programming assignments, giving quizzes, grading

### Teaching Assistant, Multicore Programming

AMIRKABIR UNIVERSITY OF TECHNOLOGY

Spring 2022

- Under supervision of **Prof. M. Momtazpour**
- Designing theoretical and programming assignments, grading

### Head Teaching Assistant, Signals and Systems

AMIRKABIR UNIVERSITY OF TECHNOLOGY

Fall 2021

- Under supervision of **Prof. M. Rasti**
- Designing theoretical and programming assignments, giving quizzes, grading

### Teaching Assistant, Data Structures and Algorithms

AMIRKABIR UNIVERSITY OF TECHNOLOGY

Fall 2021

- Under supervision of **Prof. E. Nazerfard**
- Designing theoretical and programming assignments, grading assignments

### Teaching Assistant, Linear Algebra

AMIRKABIR UNIVERSITY OF TECHNOLOGY

Spring 2021

- Under supervision of **Prof. M. H. Chehrehgani**
- Designing programming assignments, grading assignments

### Teaching Assistant, Signals and Systems

AMIRKABIR UNIVERSITY OF TECHNOLOGY

Spring 2021

- Under supervision of **Dr. A. Aghaeeyan**
- Designing theoretical and programming assignments, grading assignments

## Online Courses

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### Generative Adversarial Networks Specialization

DEEPLARNING.AI

Summer-Fall 2020

- Build Basic Generative Adversarial Networks (Credential ID: BX8G5BY5Y4DL)
- Build Better Generative Adversarial Networks (Credential ID: KUTVDLKQCM5F)
- Apply Generative Adversarial Networks (Credential ID: 2WJKAHRMERXT)

### Game Theory

STANFORD UNIVERSITY, THE UNIVERSITY OF BRITISH COLUMBIA

Summer 2021

- Game Theory (Credential ID: ZVWNNHWAJUWC)

### Deep Learning Specialization

DEEPLARNING.AI

Summer-Fall 2020

- Neural Networks and Deep Learning (Credential ID: BA53EAM4SJND)
- Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization (Credential ID: XCAY4CJAU2JA)
- Structuring Machine Learning Projects (Credential ID: PTLC7SEV8RAY)
- Convolutional Neural Networks (Credential ID: CZUV3ZTPK5TA)
- Sequence Models (Credential ID: QA34L8FPDHAY)

### Reinforcement Learning

UNIVERSITY COLLEGE LONDON

Summer 2020

- Introduction to Reinforcement Learning with David Silver (audited only)

### Machine Learning

STANFORD UNIVERSITY

Spring 2020

- Machine Learning (Credential ID: 2XNJSGPREAQY)

## Honors & Awards

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|------|---|--------------|
| 2018 | <b>Achieved top 0.3% among all 130,000+ applicants</b> , Nationwide University Entrance Exam for B.Sc. in Mathematics and Engineering | Iran         |
| 2014 | <b>3rd place</b> , Iran Zamin Open Cup (IZOCup) programming contest (held by Salam High School)                                       | Tehran, Iran |

## Languages

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**Persian** Native

**English** Proficient, TOEFL: **109 / 120** (R: 29, L: 30, S: 21, W: 29)

## References

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### **Dr. Seyed Abolfazl Motahari, Assistant Professor**

COMPUTER ENGINEERING DEPARTMENT, SHARIF UNIVERSITY OF TECHNOLOGY

- Google Scholar: <https://scholar.google.com/citations?user=rJ-biB0AAAAJ>
- Email: [motahari@sharif.edu](mailto:motahari@sharif.edu)

### **Dr. Ahmad Nickabadi, Assistant Professor**

COMPUTER ENGINEERING DEPARTMENT, AMIRKABIR UNIVERSITY OF TECHNOLOGY

- Google Scholar: <https://scholar.google.com/citations?user=pSMNSZwAAAAJ>
- Email: [nickabadi@aut.ac.ir](mailto:nickabadi@aut.ac.ir)

### **Dr. Mehdi Rasti, Associate Professor**

COMPUTER ENGINEERING DEPARTMENT, AMIRKABIR UNIVERSITY OF TECHNOLOGY

- Google Scholar: <https://scholar.google.com/citations?user=zb8pjMYAAAAJ>
- Email: [rasti@aut.ac.ir](mailto:rasti@aut.ac.ir)

### **Dr. Mohammad Mehdi Ebadzadeh, Professor**

COMPUTER ENGINEERING DEPARTMENT, AMIRKABIR UNIVERSITY OF TECHNOLOGY

- Google Scholar: [https://scholar.google.com/citations?user=080Y\\_IUAAAAJ](https://scholar.google.com/citations?user=080Y_IUAAAAJ)
- Email: [ebadzadeh@aut.ac.ir](mailto:ebadzadeh@aut.ac.ir)

### **Dr. Ehsan Nazerfard, Assistant Professor**

COMPUTER ENGINEERING DEPARTMENT, AMIRKABIR UNIVERSITY OF TECHNOLOGY

- Google Scholar: <https://scholar.google.com/citations?user=Cl5tre8AAAAJ>
- Email: [nazerfard@aut.ac.ir](mailto:nazerfard@aut.ac.ir)

### **Dr. Mostafa H. Chehreghani, Assistant Professor**

COMPUTER ENGINEERING DEPARTMENT, AMIRKABIR UNIVERSITY OF TECHNOLOGY

- Google Scholar: <https://scholar.google.com/citations?user=8Hhu1Q8AAAAJ>
- Email: [mostafa.chehreghani@aut.ac.ir](mailto:mostafa.chehreghani@aut.ac.ir)

### **Dr. Mahmoud Momtazpour, Assistant Professor**

COMPUTER ENGINEERING DEPARTMENT, AMIRKABIR UNIVERSITY OF TECHNOLOGY

- Google Scholar: <https://scholar.google.com/citations?user=uwozfWkAAAAJ>
- Email: [momtazpour@aut.ac.ir](mailto:momtazpour@aut.ac.ir)

### **Dr. Azadeh Aghaeeyan, Postdoctoral Researcher**

BIOLOGICAL SCIENCES DEPARTMENT, UNIVERSITY OF ALBERTA

- UoA Page: <https://grad.biology.ualberta.ca/mlewis/azadeh-aghaeeyan/>
- Email: [aaghaeeyan@brocku.ca](mailto:aaghaeeyan@brocku.ca)