Arman Akbari

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Education

University of Tehran (Received Full Scholarship) **Sep. 2020 – Present**
Bachelor of Science in Computer Science - GPA: 3.94/4 (19.02/20) FIRST RANK *Tehran, Iran*

National Organization for Development of Exceptional Talents(SAMPAD) **Sep. 2007 – Sep. 2020**
Diploma in Mathematics - GPA: 19.5/20 *Tehran, Iran*

Research Interests

- Machine Learning
- Computer Vision
- Trustworthy machine learning
- Human computer interaction

Publications

A 2D Geometry Based Grasping Pose Generation Algorithm for a Two-finger Robot Hand
Accepted in ICEEconf and will be published soon

- In this paper, a geometry-based algorithm is presented which can find grasp poses based on the geometry of the unknown object and propose the ones which may lead to successful grasping. Simulation results demonstrate that the proposed algorithm for unknown object grasping can find a finite number of successful grasp poses for different seen or unseen objects without using any random point

Research Experience

Research Assistant, Singapore University of Technology and Design (SUTD) **Jan. 2023 , May, 2023**
Supervisor: Prof. Ngai-Man (Man) Cheung

- Execute the intricate task of implementing Diffusion Models, with a special focus on the application of Denoising Diffusion Probabilistic Models (DDPMs). Undertake the challenging endeavor of training these DDPMs utilizing a constrained datase

Research Assistant, TaarLab: Human and Robot Interaction Laboratory **Jun, 2022 - Apr, 2023**
Supervisor: Dr. Tale Masouleh

- A 2D Geometry Based Grasping Pose Generation Algorithm
- A method for removing ungraspable pair points before testing them
- Implementing deep reinforcement learning algorithms that use our grasping pose generation the algorithm as input data

Projects Experience

DDPMs **Mar, 2023**
Internship at SUTD in Singapore

- Diffusion models are a type of generative model used in machine learning and statistics. This is a basic implementation of Denoising Diffusion Probabilistic Models

Grapevine Leaves Image Classification **Jul, 2022**
Data Mining project [done Individually and received full mark]

- Comparing different pretrained CNN models
- Designed an auto encoder for denoising

Transfer Learning (Artificial Neural Networks, Computer vision) **Nov, 2022**
Voluntarity Project

- comparing different transfer learning models to custom CNN on CIFAR-10 dataset

8-Puzzle **Apr, 2023**

Assignments of Artificial Intelligence course

- Solving the 8-puzzle game with search algorithms such as A*, UCS, IDS, BFS and DFS

Bio-Computing **Apr, 2023**

Assignments of Bio-Computing course

- Implementing many bio-computing algorithms such as genetic algorithm, PSO, and Ant Colony with Python and solving combinatorial problems such as N-Queen, TSP, and etc. with them.

Four Connect **Nov, 2022**

Assignments of Artificial Intelligence course

- I used AI algorithms such Minmax and Monte Carlo Search Tree to build an agent in order to play Four Connect game

Mini Database System using B-Tree (C++) **Feb, 2022**

Data structures and algorithms final project

- Implementation of a simplistic relational database purely in C++

Control Panel (Django) **Feb, 2021**

Final project of Basic programming course

- high level panel for uploading and grading assignments with different privileges

Corridor Game (C++) **Jul, 2021**

Final Project of Advanced Programming course

- server-client based game which can handle up to 4 players

Related Courses

- **Artificial Intelligence** [4/4]
- **Deep Learning (Topics in CS 1)** [4/4]
- **Fundamentals of CS and Programming** [4/4]
- **Data Mining** [4/4]
- **Bio-Computing** [4/4]
- **Linear Algebra** [4/4]
- **Design and Analysis of Algorithms** [4/4]
- **Data Structures and Algorithms** [4/4]
- **Advanced Programming** [4/4]
- **Probability 1** [4/4]
- **Stanford CS229(Machine Learning)** [Audit]
- **Stanford CS231n(Computer Vision)** [Audit]

Course Certification

Machine Learning — Credential ID EJUEQN5ABDFD **Nov. 2021**

This course provides a broad introduction to machine learning, datamining, and statistical pattern recognition.

- Topics include: Supervised learning (SVM, kernels, neural networks), Unsupervised learning (clustering, dimensionality reduction, recommender systems, deep learning)

Deep Learning Specialization — Credential ID WYBXMV4D8XRF **Nov. 2021**

This Specialization consists of 5 coursers:

- Neural Networks and Deep Learning
- Structuring Machine Learning Projects
- Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization
- Convolutional Neural Networks
- Sequence Models: build and train RNNs, work with NLP and Words Embeddings

Teaching Experience

Data Mining
Teaching Assistant for Dr. Sajedi, University of Tehran

- Responsibilities: Designing assignments and the final project (Spring 2023)

Fundamentals of Computer Science and Programming
Teaching Assistant for Dr. Nowzari, University of Tehran

- Responsibilities: Held tutorials on Object Oriented Programming (Fall 2022)

Fundamentals of Computer Science and Programming
Teaching Assistant for Dr. Mousavian, University of Tehran

- Responsibilities: Held tutorials on basic Python programming concepts (winter 2022)

Differential Equations
Teaching Assistant for Dr. Rokni, University of Tehran

- Responsibilities: Designing assignments and grading them (Spring 2022)

Honors And Awards

Awarded Best technical team in Robocup Asia Pacific. **2018**
Tasked to detect the ball in the field with OpenCV(image processing)

Robocup Iran Open International Competitions Participation. **2018**
Tasked to design algorithms and program the robot with c++

Received Full Scholarship from the University of Tehran **2020**
Accepted in this program (Konkour) with nearly 0.02/100 acceptance rate

Ranked 355 in Iran's National University Entrance Exam(over 250,000 Participants) **2020**
Ranked 355 out of 250000 students in national university entrance exam, Mathematical studies

Member of National Organization for Development of Exceptional Talents. **2007 - 2020**
The organization is aimed to provide a unique educational environment for the exceptionally talented students

Presentations

Introduction to Adversarial Machine learning **Apr, 2023**
Bio-Computing TA class

- A brief introduction to adversarial machine learning and its attacks and deffences

An overview of Ant-Q algorithm **May, 2023**
Bio-Computing class presentation

- Presented Ant-Q algorithm and Q-learning, Bellman optimality, off-policy learning

Skills

Programming Languages: Python, C/C++

Frameworks/Libraries: Tensorflow, Keras, Scikit-learn, openCV, Pandas, Numpy, Matplotlib, Seaborn, Django

Soft Skills: Teamwork, Problem Solving, Work Ethic, Adaptability, Critical Thinking

Others: Violin(+4 years of experience), Music Theory, Git, Linux

Languages

Persian: Native **English**: Proficient