

# Sepand Ali Madad Soltani

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## Education

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### K.N. Toosi University of Technology

Bachelor of Science in Electrical Engineering

Concentration: **Electronics Engineering**

GPA: 16.26/20 (Last two years: 17.29/20)

GPA 4.0 scale: 3.37 (Last two years: 3.72)

Tehran, Iran

**Anticipated** in February 2023

## Academic Projects

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**Classification of Mild Cognitive Impairment(MCI) and Alzheimer's disease patients using Deep Neural Network based on fMRI Functional Connectivity** Summer 2022 (Ongoing)

- Studied the previous works on this subjects for finding the gap (Still early stages of the project)
- Preprocessed the raw fMRI data using the FSL library

**Tetris AI bot training using Deep Reinforcement Learning** Summer 2022 (Ongoing)

- Developed the game from scratch using C++
- Created a custom C++ to Python API for the game using Pybind11 library
- Developed a Deep Q learning agent for training the AI to play the game

**The Game of Tetris with a Custom Game Engine Using OpenGL in C++** [\[Github\]](#) Spring 2022

- Developed a custom 2D graphics renderer completely from scratch using the [OpenGL](#) graphics API in C++
- Added game functionalities, menus and text rendering capabilities to the engine
- Designed and implemented the game of [Tetris](#) using the said engine in Object Oriented C++

**Implementation of Synthesizable A\* Search Algorithm in FPGA-VHDL** [\[Github\]](#) Spring 2021

- Developed a synthesizable VHDL code for A\* algorithm capable of solving any 10x10 mazes
- Developed a python script for generating random mazes
- Simulated and tested the algorithm for solving random mazes using VHDL test bench

**Smart Temperature Detection PCB Circuit Design** Summer 2020

- Designed circuit schematic and PCB layout using Altium designer  
(Key components: ATMEGA64 and SIM800C)

**Calculating the Magnetic Field Caused by a Spherical Solenoid** [\[Github\]](#) Winter 2019

- Derived the formula for the magnetic field caused by a spherical solenoid
- Calculated and graphed the magnetic field on multiple plates
- Integrated the graphs and the calculator in a custom GUI developed using MATLAB App Designer

## Skills

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- **Software:** C++, Python, VHDL, MATLAB, PSpice, Proteus design suite, Altium Designer, FMRIB FSL library, AVR C
- **Hardware:** Arduino, Various wireless communication modules (BLE, RF, GSM, IR and ESP8266)
- **Language:** Persian(Native), English(Fluent), French(Intermediate-A2)
- **Online Courses and Certificates:** Certificate of MATLAB from Sharif University, Certificate of Altium Designer from K.N. Toosi University of Technology

## Work Experience

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### ETS, University of Quebec

Remote Research Assistant

Montreal, Canada

Winter 2022

- Assisted in a project aiming to predict multiple cognitive traits and performances based on EEG using Deep Convolutional Neural Networks

**Razeq Co.**

Electronics Engineer Internship

Tehran, Iran

Summer 2021

- Researched the design and development process of a parametric speaker (directional speaker) and examined the feasibility of manufacturing it
- Implemented smart presence detection and remote-control support for the monitor stand in Valiasr Street Museum
- Developed and assembled various hardware for installation in Iran's pavilion in Dubai Expo 2020 (Electric control panel, wiring, lighting and presence detection system)