Sepand ALIMADADSOLTANI

+33 (0)6 49 55 25 42 | Email | Github Page | Linkedin

Education

University of Claude Bernard, Lyon 1 — Lyon, France
Master II in Medical Device Engineering — Fall 2024-Ongoing
10,000€ Excellence Scholarship Recipient

K.N. Toosi University of Technology — Tehran, Iran
4 Year Bachelor of Science in Electrical Engineering — 2018-2023
Concentration: **Electronics Engineering**
GPA: 16.33/20 (Last two years: 17.29/20)

Research Interests

- Biomedical Engineering
- Machine learning and Artificial Intelligence in Health
- Medical Image Processing
- Data Visualization
- 3D Rendering

Bachelor Thesis

MedVisPy: Python-Based Medical Image Analysis Software with an Interactive Tissue Boundary Segmentation Tool Winter-Summer 2023

- Developed "MedVisPy" a Python-based medical image analysis software, from scratch utilizing Python, VTK, and PyQt libraries
- Demonstrated proficiency in utilizing VTK (Visualization Toolkit) for advanced visualization and manipulation of medical images
- Implemented multiple interactive tools (ruler, shapes, and text insertion tools)
- Developed an image processing algorithm for tissue boundary detection in a smart interactive scissor tool for fast semi-automatic tissue segmentation
- Enabled users to import custom plugins to extend the functionality of the software based on their needs
- Successfully shipped the software for Linux and Windows operating systems

Skills

- **Programming Language:** Python, C++, MATLAB, QML
- **Software:** Tensorflow, FMRIB FSL library, GNU/Linux, Qt Framework, Visualization Toolkit (VTK)
- **Language:**Persian (Native), English (TOEFL: **Overall: 101/120, R: 27, L:27, S:23, R:24**), French (Beginner-A2)

Academic Projects

Image-based Persian and English Character Sequence Recognition using Recurrent Convolutional Neural Networks(RCNN) Winter 2023

- Implemented the network using the Tensorflow library in Python
- Synthesized images of Persian text of different variety
- Applied data augmentation techniques such as rotating, translating, adding distortion, and adding noise to images
- Successfully trained the model for both languages using the self-made synthesized Persian dataset and public English datasets
- Achieved +85% accuracy for both languages

Automated fMRI Preprocessing and Time-series Extraction Pipeline for Large Datasets using FSL in Python Summer 2022

- Implemented brain extraction from structural reference MR image
- Implemented fMRI preprocessing including motion correction, slice timing correction, spatial smoothing, and co-registration
- Implemented atlas-based ROI time-series extraction
- Enabled parallel processing to accelerate computation for large datasets
- Utilized the program for processing fMRI data from the ADNI dataset

Tetris player bot using Deep Reinforcement Learning Summer 2022

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

The Game of Tetris with a Custom Game Engine Using OpenGL in C++ Spring 2022

- Developed a custom 2D graphics renderer completely from scratch using the OpenGL graphics API in C++
- Implemented user input handling, navigatable menus, and text rendering capabilities to the engine
- Designed and implemented the game of Tetris using the said engine in Object Oriented C++

Calculating the Magnetic Field Caused by a Spherical Solenoid 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

Work Experience

TECVICO Vancouver, Canada (Remote)
Medical Image Visualization Software (Freelance Project) summer 2023

- Created a Python-based medical analysis software focusing on user-friendliness and user experience
- Designed and implemented a workflow user interface for bioinformatics analysis and processing using the Qt framework
- Worked with a team of engineers to integrate various machine learning algorithms in to the workflow
- Designed and integrated a medical image visualizer using VTK
- Integrated multiple visualization tools and pipelines such as colormaps, image thresholding and interactive segmentation

ETS, University of Quebec Montreal, Canada (Remote)
Remote Research Assistant Internship Winter 2022

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

Razeq Co. Tehran, Iran
Electronics Engineer Internship 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)