Satvik Srivastava

Bachelor of Technology
in Computer Science and Engineering
Indian Institute Of Technology, Ropar

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Education

Degree	Institute/Board	CGPA/Percentage	Year
Bachelor of Technology	Indian Institute of Technology, Ropar	8.00 (Till 4th Sem)	2022-Present
Senior Secondary	Central Board of Secondary Education(CBSE)	94%	2022
Secondary	Council for Indian School Certificate Examinations(CISCE)	99.2%	2020

Internship

Classification of Noisy Low-Resolution OCT Retinal Images (under Dr. Puneet Goyal, IIT Ropar) *April 2024-June 2024*
Deep Learning / Python / Keras / Tensorflow / NumPy / Matplotlib **Github**

- Trained machine learning models to improve and classify noisy, low-resolution retinal OCT volume images into Healthy,DME and Non-Diabetic categories.
- ***Denoising task***: Employed a Self-Supervised S2S network (encoder-decoder architecture) and cGAN (Generative Adversarial Network) to reduce noise in the images.
- ***Super-Resolution task***: Utilized Dual Scale ESR-GAN and Through Plane ESR cGAN to enhance the resolution of the low-resolution test dataset images.
- ***Classification***: Used pretrained ResNet-50 combined with the Channel Block Attention Module (CBAM) for volume classification post-denoising and super-resolution.

Projects

- **Marker-based Image Segmentation using Disjoint Set Union**
  Data Structures / Python / C++ / Flask / HTML / CSS / JavaScript **Github**
  – Developed a web application that performs segmentation of an image into its constituent objects and integrated it with the backend using the Flask framework.
  – Enables users to upload an image and select a few rectangular regions of pixels, which will seamlessly merge with neighbouring ones using the Disjoint Set Union (DSU) data structure to accurately form the borders of the desired objects in the image.
- **Game of Cops and Robbers on Graphs**
  C++ / SFML Library / Data Structures and Algorithms / Visual Studio **Github**
  – Built an interactive game of 'Cops and robber' on grid, cylinder, and torus (sphere-shaped) graphs using the SFML library for GUI development.
  – Implemented efficient algorithms to capture the robber using the minimal number of cops.
  – Enabled player interaction through mouse clicks for cop placement and keyboard inputs for robber movement.
- **Codeforces and Leetcode Chrome extension**
  HTML / CSS / JavaScript **Github**
  – Developed a Chrome extension that enables adding and removing Codeforces and Leetcode friends, to access their rating changes directly from the contest page enabling easy monitoring and comparison.
  – Utilized Storage APIs to integrate a time tracker for each question and implemented a toggle button to lock questions that users do not wish to revisit, enhancing focus and efficiency in problem-solving.

Minor Projects

- **RISC-V Assembler**: Developed an assembler for 16-bit RISC-V architecture; Implemented Branch prediction to predict the next instruction at each branch instruction. **Github**

Technical Skills

- **Programming Languages**: C, C++, Python, Perl, Java, HTML, CSS, JavaScript
- **Libraries/Frameworks**: Keras, Tensorflow, Simple and Fast Multimedia Library(SFML), NumPy, Matplotlib, Flask

Key courses taken

Data Structures & Algorithm, Computer Architecture, Digital Logic Design, Discrete Mathematics, Programming Paradigms and Pragmatics, Probability and Statistics, Linear Algebra, Calculus, Differential Equations

ACHIVEMENTS

- **Specialist on Codeforces**, Max Rating of 1473 **[Codeforces Profile]**
- **Institute Merit Scholarship**, Awarded to top 7% based on CGPA criteria. *2022*
- **Secured a rank among Top 1% in JEE Examinations**,
  JEE Advanced:All India Rank 1883 ,
  JEE Mains:All India Rank 2700 *2022*