Akshat Singh

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EDUCATION

- **BS-MS in Engineering Sciences**
  Electrical Engineering and Computer Science
  CPI: 7.95/10
  2020 - Present
  Bhopal, India

- **Higher Secondary / +2**
  Toolika Public School, Jamuna Deva, Mau Road, Ghazipur, U.P.
  Percentage: 79.8
  2017 – 2019

- **Secondary**
  M.J.R.P. Public School, Jagdishpuram,Ghazipur, U.P.
  CGPA: 10/10
  2016 – 2017

PROJECTS & CONTRIBUTIONS

- **Team Based Car Racing using Reinforcement Learning**
  Instructor: Prof. Sujit PB
  This semester project for Multi Agent Reinforcement Learning course (ECS427) involved creating a simulation for team based racing where two teams of two cars are present and a team wins if any one of their cars finishes the race.
  Github
  August 2024 - November 2024

- **Design and Analysis of Virtual Reality Interface for Persistent Human-Swarm Interaction**
  Instructor: Prof. Sujit PB
  This master's thesis project focuses on designing a user interface for Virtual Reality (VR) that capitalizes on the immersive advantages of VR technology. The project involves comparing the effectiveness of this VR interface with traditional 2D screen interfaces by conducting experiments to assess human operators' performance in both environments. Statistical analysis is used to evaluate and compare the results. Additionally, the project includes integrating the developed user interface architecture with real-world drone systems, testing its practical applicability, and measuring its impact on operator efficiency and performance in a dynamic setting.
  May 2024 - Present

- **User-Interface for Virtual Reality-Based Human Swarm Interaction**
  Instructor: Prof. Sujit PB
  Final Year Project(ECS412). This project involves developing interfaces to facilitate collaboration between robotics swarms and humans in the Virtual Reality domain.
  January 2024 - April 2024

- **Biostatistics Mini Project**
  Instructor: Dr. Nagarjun Vijay
  The semester project for Biostatistics course (BIO407) involved analyzing data from various cell lines related to HIV-1 nef, a protein essential for AIDS development, and performing statistical analysis on the data.
  Github
  January 2024 - April 2024

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- **Indian Stock Market Network**
  Instructor: Dr. Kundan Kandhway
  The semester project for Network Science: Theory and Applications course (ECS414) involved collecting and processing stock market data of the top 200 Indian stocks, analyzing their correlations, creating a network based on these correlations, and examining various network features such as edge density and centrality.

  Github
  January 2024 - April 2024

- **Bioinformatics Algorithms**
  A hobby project created while auditing the Bioinformatics course (BIO402), which implements dot matrix alignment and global sequence alignment of two sequences using the Needleman–Wunsch algorithm.

  Github
  January 2024

- **MathsLib**
  A hobby project to create a C# library that contains various Mathematical Functions.

  Github
  December 2023 - Present

- **RSA Implementation**
  A hobby project created while doing the Modern Cryptography course (ECS610), which implements the vanilla RSA encryption and decryption scheme.

  Github
  November 2023

- **Breast Cancer Classification**
  Instructor: Dr. Bhavna Rajasekaran
  Semester Project for the course Data Science in Practice (DSE315). This project involved using the Breast Cancer Wisconsin data and classifying cases as benign or malignant.

  Github
  August 2023 - November 2023

- **Swarm Robotics with Virtual Reality**
  Instructor: Prof. Sujit PB
  Summer Project. This project involved learning about Swarm Robotics and integrating various Swarm Algorithms with Virtual Reality using Unity 3D.

  May 2023 - July 2023

- **Flappy Moo**
  A Flappy Bird clone with various changes. Created from scratch using WinForms in C#.

  Github
  May 2023

- **Pokemon Fight Predictor**
  Instructor: Dr. Tanmay Basu
  A machine learning model for predicting the winner of Pokemon Fights, completed as part of the semester project for the course Data Science and Machine Learning (ECS308).

  Github
  January 2023 - April 2023

- **Smol Ame Mod Installer (SAMI)**
  A mod installer for Smol Ame game that fetches all available mods on Github and lets users install selected mods locally. Made using WinForms.

  Github
  July 2022

- **Dynamic Line Segment Intersection**
  Instructor: Dr. Sujoy Bhore
  Summer Project. This project involved learning various computational geometry algorithms like Sweep Line algorithm and trying to find an algorithm which dynamically finds the intersections

  May 2022 - July 2022

- **Convex hull Algorithms**
  Implementation of the Graham's Scan and Jarvis March algorithms learnt while working with Dr. Sujoy Bhore

  Github
  April 2022

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- **smolTAS**
  A mod for the Unity3D game Smol Ame that helps with tool-assisted speedruns. It allows users to write inputs on a .txt file, control game speed, pause/resume at any point, and save/load player position and timing.

July 2021 - January 2022

TECHNICAL SKILLS

- **Programming and Scripting Languages**
  C#, Python, C/C++, R, Matlab, HTML/CSS, LaTeX

- **Tools and Libraries**

  – **C#:** WPF, WinForms, .NET Framework 4.8, .NET 5, .NET 6, .NET 7, .NET 8, Blazor, Unity-MLagents, PythonNET, Unity ROS Integration

  – **Python:** Numpy, Scikit-learn, Matplotlib, Seaborn, Pandas, statsmodel, gymnasium, Pytorch

  – **Database:** mySQL

- **Operating Systems and Software**
  Linux, Unity, ROS2, Blender, Wolfram Mathematica

AWARDS AND CERTIFICATIONS

- **Course on HTML5**
  University of Michigan   Dec 2021
  Coursera

EXTRACURRICULAR ACTIVITIES

- **Coordinator**
  Comix Club   Bhopal, India
  Fine Arts and Literary Club, IISER Bhopal   January 2023 - December 2023

- **Student Mentor**
  Student Mentorship Programme   Bhopal, India
  Student Development Council, IISER Bhopal   September 2023

- **Technical Head**
  Model United Nations   Bhopal, India
  Student Development Council, IISER Bhopal   March 2023

- **Convener**
  Armageddon Gaming and Tech Fest   Bhopal, India
  Computing and Networking Council, IISER Bhopal   January 2023

- **Student Mentor**
  Student Mentorship Programme   Bhopal, India
  Student Development Council, IISER Bhopal   November 2022

- **Team member**
  Open House   Bhopal, India
  IISER Bhopal   September 2022

- **Core Committee Member**
  Computing and Networking Council   Bhopal, India
  IISER Bhopal   August 2022 - July 2023

- **Core Committee Member**
  Comix Club   Bhopal, India
  Fine Arts and Literary Club, IISER Bhopal   August 2022 - December 2022

- **Event Manager**
  Tech Fest - Enthuzia
  Cultural Council, IISER Bhopal

  Bhopal, India
  March 2022

- **Notable Achievement: Speedrunning**
  Super Mario Bros.
  Achieved a personal best of under 5 minutes in speedrunning
  Super Mario Bros.(Any% category), recognized within the
  speedrunning community.
  Smol Ame
  Achieved several world records in various categories of the game
  Smol Ame