IISER Bhopal
INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH BHOPAL

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Personal Statement

I am an Computer Science Undergrad at IISER Bhopal with a strong interest in **Artifical Intelligence,Machine Learning and theoretical CS**. My current research interests include **Deep Generative Models and Novel Computer Vision** Tasks. I am really interested in **Diffusion models and the Score/SDE interpretation of them**, I am working with the same as of now.

Research Experience

Project Intern at JINR, Dubna *Feb,2025 - Present*
Selected for the INTEREST Program

- Working on application of CNNs to Particle Physics experiment (OPERA) carried out at CERN and JINR
- Also working on building Visual Tools for the same and Analysis of the Experiment Data.

Education and Achievements

Indian Institute of Science Education and Research, Bhopal (IISERB) *Aug 2023 - Present*
BS in Computer Science

- GPA: 8.98/10.0
- **Coursework:** Data Structures and Algorithms, Discrete Mathematics, Linear Algebra, Single Variable Calculus, Multivariable Calculus,Probability and Statistics,Programming with C,Complex Variables, Econometrics, Basic Electronics, Signals and Systems.
- **Activities:**
  - Recipient of Prestigious **Reliance UG Scholarship**
  - Winner of Institute wide Competitive Coding Contest
  - Member of IISERB Coding Community

Technologies and Skills

Languages : C++, C, Java, Python, Lua
Machine Learning : Supervised Learning, Unsupervised Learning, Deep Learning
Machine Learning Frameworks/Libraries : PyTorch, Numpy, Matplotlib, Scikit-learn, Tensorflow(beginner)
Software & Tools : Git,Github, LateX, AutoCAD, VS Code, Visual Studio
Web Development : HTML, CSS, JavaScript
Scientific Computing :MATLAB, Simulink
Coding Platforms : Codechef, Codeforces

Projects

GravLensDiffusion *github*

- The Project aims to generate high quality images of Strong Gravitational Lensing.
- Implemented the DDPM model from scratch and trained it to generate images of Strong Gravitational Lensing.
- Achieved high accuracy in the Generation task despite limited compute resources. Evaluated using standard metric FID between the source images and generated images.
- Tools Used: Python,PyTorch,Root Software

GravLensNet *github*

- The Project aims to achieve high accuracy in classifying images of Strong Gravitational Lensing.
- Implemented custom ResNET architecture after reading the seminal paper "Deep Residual Learning for Image Recognition".
- Achieved high accuracy in Classifying Astronomical Data. Evaluated using standard metrics like ROC and AUC.
- Tools Used: Python,PyTorch,Root Software

Mystery_Maze : 2D Game in Java *github*

- A 2D Maze Navigation Game written in Java.
- Uses Depth First Search Algorithm to generate a new Maze in every Game.
- Timed Bomb mechanic
- AI enemy agent following the player
- Tools Used: Java

Set of 2D Games in Lua *github*

- I made a set of 2D Games using LOVE2D Engine and Lua , though these were for a course, I learned a lot about OOPS due to them.
- Tools Used: Lua, Love2D