Bhoumik Patidar

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Computer Science And Engineering
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ACADEMIC DETAILS

Degree	Specialization	Institute	Year	CPI/%
B.Tech.	*Computer Science And Engg.*	IIT Gandhinagar	2022-Present	9.06/10
Class XII	*Physics, Chemistry, Maths*	IBS Global Academy, Ujjain	2021	90/100
Class X		St. Paul's Convent, Ujjain	2019	96.5/100

INTERNSHIP EXPERIENCE

- **Summer Research Internship Program, IITGN** [May 2024 - Present]
  (Advisor: Prof. Shanmuganathan Raman, IIT Gandhinagar)
  Research Internship at the **Computer Vision lab** at IITGN. Currently undertaking research on **Generative Adversarial Networks (GANs)** for image synthesis and compression. Responsibilities include developing and training GAN models, experimenting with image compression techniques, and analyzing results.

PROJECTS

- **Strategic Urban Greening using Semantic-Segmentation of Satellite Imagery** [January '24 - April'24]
  (Prof. Shanmuganathan Raman, IIT Gandhinagar) | **(working on manuscript)** | Project Link
  - Utilized **Unet for semantic segmentation** of satellite imagery to identify vacant lands for potential urban greening.
  - Analyzed urban heat island (UHI) effects by integrating Land Surface Temperature (LST) data with satellite imagery.
  - Developed an **algorithm to select optimal locations** for urban forestation aimed at mitigating UHI effects.
  - CS299 project in a team of three.
- **Machine Learning Based Plant Electrophysiological Signal Study** [August '23 - November '23]
  (Prof. Subramanian Sankaranarayanan, IIT Gandhinagar) | Project Link
  - An interdisciplinary project involving machine learning, plant physiology, and signal processing, to explore and understand the electrophysiological responses of tobacco plants to stimuli (wound-induced variation potentials).
  - Employed signal measurements, signal processing, and machine learning algorithms to collect and interpret plant electrical data.
  - Developed an accurate **SVM-based ML algorithm detecting plant injury** onset and variation potential duration.
  - Done with a teammate as CS299 project course in 3rd semester.
- **Numerical Analysis Of Ideological Outreach In Social Media Networks** [August '23 - September '23]
  (Prof. Dilip Srinivas Sundaram and Prof. Akshaa Vatwani, IIT Gandhinagar) | Project Link
  - Developed a numerical simulation model to analyze the dynamics and patterns of ideological outreach in diverse social media networks using numerical methods and network modeling.
  - Devised and implemented a bespoke **mathematical model and algorithm from inception**, yielding promising outcomes in understanding ideological dissemination across social media networks.
  - Did the project alongside four other members as a part of the Numerical Methods course.
- **Decoding US Higher Education: Economic Analysis and Perception in 1995** [March'23-April '23]
  (Prof. Shanmuganathan Raman, IIT Gandhinagar) | Project Link
  - Analyzed 1995 US higher education using Python, merging datasets to extract insights crucial for university selection, leveraging skills in data analysis, visualization, statistics, and domain knowledge using pandas and matplotlib libraries.

TECHNICAL SKILLS

- **Programming Languages:** Python, C, C++, MATLAB
- **Data Analysis and Machine Learning:** Practical experience in Machine Learning, Deep Learning and **Generative AI** for Computer Vision, including **VAE**, **GAN** and **Diffusion Models**. Python Libraries (Numpy, Pandas, Matplotlib, Scikit-learn, Keras, PyTorch).
- **Remote Sensing:** Basics, Google Earth Engine, Satellite Image Processing, Geospatial Analysis.
- **Electronics And Circuit Design:** PCB Designing, LTSpice (Analog electronic circuit simulator), Arduino Micro-Controller, DAQ for electrical data
- **CAD And Modelling:** Autodesk Inventor, Fusion 360

ACHIEVEMENTS

- **Dean's List Semester I, II, and III:** For excellent academic performance | 2022-23
- **NTSE Scholar:** Ranked in the top 2000 students from 1,000,000 applicants through two stages of selection in the National Talent Search Examination (NTSE). | 2019
- **Qualified Regional Mathematics Olympiad (RMO):** Ranked among the top 30 amongst the state in the Regional Mathematics Olympiad, qualified for INMO. | 2020
- **JEE Advanced:** AIR 6885

POSITIONS OF RESPONSIBILITY

- **Core Team Member | Odyssey: Astronomy Club | IIT Gandhinagar** [December'23 - Present]