Bhoumik Patidar

bhoumik.patidar@iitgn.ac.in | +91 9406720572 | GitHub | LinkedIn

Academic Details

- **B.Tech. — Computer Science and Engg., IIT Gandhinagar** *2022–Present* / ***CPI: 8.82/10***
- **Class XII — IBS Global Academy, Ujjain** *2021* / ***90/100***

Internship Experience

- **Software Engineering Intern** May '25 – Present
  Qualcomm *Open Source*
  - Contributed to **ELD**, Qualcomm's open-source **ELF linker**, by implementing **x86_64 backend support**.
  - Implemented linker-side support for static and dynamic linking, including **relocation handling** and executable/shared object layout across link-time and runtime boundaries.
  - Built ABI-compliant mechanisms for dynamic symbol resolution, including linker-generated indirection and runtime features such as TLS models and IFUNC in shared libraries.
  - Debugged and extended a **C++ systems codebase**, contributing reviewed, production-ready changes.
- **Summer Research Intern (SRIP)** May '24 – July '24
  Computer Vision Lab, IITGN *Project Link*
  - Implemented **knowledge distillation framework** to compress **GAN architectures** by training lightweight student models to replicate teacher generator-discriminator behavior.
  - Reduced model complexity and computational requirements while preserving generation quality through **adversarial distillation loss**.

Projects

- **Bottleneck-Gated Network for Sparse-ROI Semantic Segmentation** Feb '25 – May '25
  Data Science Course Project *Project Link*
  - Engineered a two-stage **gating mechanism** for **U-Net bottleneck features** to selectively activate decoders on Region-of-Interest patches, achieving **56.6% reduction in decoder FLOPs** with negligible computational overhead.
  - Implemented **plug-and-play architecture** compatible with pre-trained U-Nets requiring zero weight updates, enabling efficient inference for sparse segmentation tasks.
- **Strategic Urban Greening using Semantic Segmentation of Satellite Imagery** Jan '24 – April '24
  Computer Vision Lab, IITGN *Project Link*
  - Developed end-to-end **deep learning pipeline** integrating **U-Net semantic segmentation** with **Land Surface Temperature (LST)** analysis to identify optimal vacant land sites for urban greening and UHI mitigation.
  - Designed **optimization algorithm** combining satellite imagery segmentation with thermal data to prioritize high-impact forestation locations for maximum heat island reduction.
- **Machine Learning Based Plant Electrophysiological Signal Study** August '23 – November '23
  Plant Biology Lab, IITGN *Project Link*
  - Built interdisciplinary **ML pipeline** combining **signal processing** and classification algorithms to detect and analyze wound-induced variation potentials in tobacco plant electrophysiological responses.
  - Developed high-accuracy **SVM-based model** for real-time detection of plant injury onset and variation potential duration from noisy physiological signals.

Achievements

- Dean's List — Semesters I, II and III for excellent academic performance (consistently securing 9+ CPI).
- Selected for Amazon Summer School on Machine Learning and AI | 2024
- NTSE Scholar : Ranked in top 2000 out of 1,000,000 applicants | 2019
- Qualified Regional Mathematics Olympiad (RMO) and ranked among the top 30 in the state | 2020

Technical Skills

- **Programming Languages:** C++, C, Python
- **Systems & Toolchains:** Linker Development, ELF, Binary Toolchains, Program Execution Environment
- **Platforms & Tools:** Linux, Git, GitHub Actions, GDB
- **Machine Learning & Computer Vision:** Deep Learning, Computer Vision, GANs, Semantic Segmentation, Knowledge Distillation, PyTorch, Keras