# Siddhant Kulkarni

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## Education

**B.E. Computer Science with a Minor in Data Science,** Oct 2021 – Aug 2025
*Birla Institute of Technology and Science, Pilani*
**CGPA: 9.23**
Institute **Merit Scholarship** Awardee - tuition fee waiver for excellent academic performance (**top 3%**)
*Relevant Coursework*: Operating Systems, Computer Networks, Network Programming, Compiler Construction, Database Systems, Object Oriented Programming, Machine Learning, Foundations of Data Science, Probability and Statistics, Linear Algebra

## Professional Experience

**Atlassian,** *Software Engineer Intern* ⊡ Jun 2024 – Jul 2024
- Developed a **Java Spring Boot RESTful API** to retrieve repository data and **Software Bill of Materials** (SBOM), enabling insights into **end-of-life dependencies**, **licensing**, and **compliance** issues
- Implemented **React**-based interfaces for dynamic SBOM visualization

**Jio Platforms,** *Summer Intern* ⊡ May 2023 – Jul 2023
- Part of **Jio Engage** ⊡ worked on developing models to create **face filters** to **boost user engagement**
- Implemented various **semantic segmentation** models for hair segmentation using **PyTorch** and **Keras**
- Integrated the hair segmentation model with a **face detection** pipeline to create a **segmentation mask** of hair, achieving a **98% pixel accuracy** and a **91% mean IOU**

## Projects

**Upgradable Smart Contracts,** Nov 2023 – present
*Data, Systems and High Performance Computing Lab*
- Working under the guidance of *Dr. Arnab K. Paul* ⊡ on the **mutability of Ethereum smart contracts** post-deployment using the **EIP-2535 Diamond Standard** while ensuring the preservation of trust within the system
- Compared **performance** of **mutable** and **immutable** smart contracts for **gas** and **system** metrics
- Setup a multi-client **proof-of-stake** Ethereum testnet and monitored metrics using **Prometheus** and **Grafana**

**Improving Adversarial Attacks using Membership Inference** Aug 2023 – present
- Exploring various **membership inference attacks** how they can be leveraged to enhance **adversarial attacks** against various **machine learning models** under the guidance of *Dr. Hemant Rathore* ⊡
- Investigated and proposed **countermeasures**, assessing **feasibility** and **performance**

**Formal Verification for Rust Ported Codebases**
- Explored **formal verification** methods for **memory safety** and **functional correctness** in ported **Rust** and **C** code
- Utilized **KLEE** and **Kani** Rust verifier to verify various properties of C and Rust code, respectively

**Tetris Game Programming Language**
- Developed a custom game programming language for Tetris in **Python**, utilizing **flex** for lexical analysis and **bison** for syntax parsing to facilitate advanced **game customization** and **functionality**

## Awards

**Vimarsh 5G Hackathon Winner,**
*Bureau of Police Research and Development, Ministry of Home Affairs, Department of Telecom and TCoE-India*
- **Awarded first place** in a **national hackathon** ⊡, securing a prize of **Rs. 1,50,000**
- Developed a **machine learning-based intrusion detection system** tailored for law enforcement agencies
- Integrated explainability techniques like **LIME** and **SHAP** to ensure **regulatory compliance** and **transparency**

## Extracurriculars

**Competitive Programming,** *Specialist on Codeforces* ⊡

**Nirmaan Organization,** *Core Member* ⊡
- Part of Project Shiksha, helped prepare students from nearby underprivileged areas for the JNVST scholarship exam
- Took an active part in teaching and mentoring over 20 students, 2 of whom successfully cleared the exam