

## Education

### University of California San Diego

California, USA

M.S. COMPUTER SCIENCE AND ENGINEERING (GPA: 4/4) [[Transcript](#)]

2022 - Dec 2023

Relevant Coursework: Search &amp; Optimization, Graduate Networked Systems, Algorithm Design &amp; Analysis

### Indian Institute of Technology Gandhinagar

Gandhinagar, India

B.TECH. WITH HONOURS IN COMPUTER SCIENCE AND ENGINEERING (CPI: 9.01/10) [[Transcript](#)]

2018 - 2022

## Technical Knowledge

**Programming Languages:** Python, C, C++, Go, MATLAB, SQL, Verilog, JavaScript, HTML, CSS, SLURM Scripting**Tools:** Git, PyTorch, Tensorflow, Docker, Kubernetes (Beginner), ROS, OpenCV, GCP,  $\text{\LaTeX}$ , Huggingface

## Publications

Zeel Patel, **Harsh Patel\***, Palak Purohit\*, Shivam Sahni\*, Nipun Batra, **Accurate and Scalable Gaussian Processes for Fine-grained Air Quality Inference**, Thirty-Sixth AAAI Conference on Artificial Intelligence (AAAI (2022)) [[doi](#)]**Harsh Patel**, Xulang Zhang, Qian Liu **Enhancing Negation Scope Detection using Multitask Learning**, 2021 International Conference on Data Mining Workshops, (ICDMW (2021)) [[doi](#)]**Harsh Patel\***, Praveen Venkatesh\*, Shivam Sahni\*, Varun Jain\*, Mrinal Anand, Mayank Singh, **Program Synthesis: Does Feedback Help?**, ACM India 5th Joint International Conference on Data Science and Management of Data (CoDS-COMAD (2022)) [[doi](#)][[poster](#)]Rohan Patil\*, Raviraj Dave\*, **Harsh Patel**, Viraj Shah, Deepayan Chakrabarti and Udit Bhatia, **Assessing the interplay between travel patterns and SARS-CoV-2 outbreak in realistic urban setting**, (*Applied Network Science* 6, 4, SpringerOpen(2021)) [[doi](#)]

## Relevant Experiences

### Nokia Bell Labs

Murray Hill, New Jersey

AUTONOMOUS SYSTEMS RESEARCH INTERN | MENTOR: MRS. BUVANESWARI RAMANAN

June 2023 - August 2023

- Leveraged large language models (LLMs) to enhance Nokia's patent-pending, proprietary MLOps platform for the end-to-end operations of ML-based use cases.
- Developed innovative task-specific knowledge enrichment strategies, involving automatic retrieval using Langchain and vectorstores, to improve the performance of LLMs in complicated code generation tasks.

### Nanyang Technological University

Singapore

RESEARCH INTERN | MENTOR: PROF. ERIK CAMBRIA

May. 2021 - Jul. 2021

- Developed a *deep multitask learning* framework that enhances the performance of Negation Scope Detection using POS tagging as an auxiliary task. Used *transformers* and *neural tensor fusions* to leverage the inter-task correlations. Achieved **5%** improvement over the baseline models.

### Mysuru Consulting Group (MCG AI)

Mysuru, India

MACHINE LEARNING INTERN | MENTOR: MR. GAUTAM RAMACHANDRA (CTO)

Apr. 2020 - June. 2020

- Conducted advanced data processing and analysis to extract valuable insights from financial datasets. Used LSTMs for stock market excess return forecasting.

## Projects

### Advancing Model-Agnostic Text Dataset Distillation [GitHub Repo](#) [Arxiv](#)

UC San Diego

MENTOR: PROF. JINGBO SHANG ▷ NLP | DEEP LEARNING | EFFICIENT LEARNING

Apr. 2023 - June 2023

- Developed novel text-dataset distillation techniques that demonstrate strong cross-architecture generalization capability, enhancing efficiency and performance in natural language processing tasks. Achieved a remarkable 95% distillation ratio with just 30 samples.

### Robust, Scalable, & Fault-Tolerant Networked File Storage Service

UC San Diego

MENTOR: PROF. GEORGE PORTER ▷ NETWORKED SYSTEMS DESIGN | DISTRIBUTED CLOUD COMPUTING

Jan. 2023 - Mar. 2023

- Developed a cloud-based file storage system, leveraging **gRPC** for streamlined communication, **Consistent Hashing** for efficient load balancing, and the **RAFT** consensus algorithm to ensure fault-tolerance and consistency.

### Accurate and Scalable Gaussian Processes for Fine-grained Air Quality Inference [Repo](#) [GP-Viz](#)

IIT Gandhinagar

MENTOR: PROF. NIPUN BATRA ▷ APPLIED &amp; DATA-DRIVEN MACHINE LEARNING | BAYESIAN MODELING

Aug. 2021 - May 2022

### Exploring Constrained Reinforcement Learning for Autonomous Driving [GitHub Repo](#)

IIT Gandhinagar

MENTOR: PROF. NIPUN BATRA ▷ REINFORCEMENT LEARNING | POLICY OPTIMIZATION &amp; EVALUATION

Jan. 2021 - May. 2021

### Multi-Threaded Repository Synchronizer [GitHub Repo](#)

IIT Gandhinagar

MENTOR: PROF. NIPUN BATRA ▷ OPERATING SYSTEMS | DECENTRALIZATION

Oct. 2020 - Dec. 2020

## Honors and Community Engagement

2022 **Cash Award for Journal Publication**, Scheme for IITGN Students (\$140)2021 **Teaching Assistant - Machine Learning and Natural Language Processing courses**, IITGN2021 **Pull Request (PR) accepted for PyMC**, Open source GitHub package for Bayesian statistical modeling2019 **Leadership - Core Committee Member**, Amalthea - Tech Summit, Jashn - Cultural Fest at IITGN2018 **Joint Entrance Exam (JEE)**, All-India-Rank 143 out of 1.13 million candidates