Rohan Patil

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EDUCATION

University of California San Diego — *California, USA*
Ph.D. Student, Computer Science (Advisor: Henrik Christensen) — *Sept. 2023 - Mar. 2027 (Expected)*
M.S. Computer Science and Engineering, CGPA 4.0 — *Sept. 2021 - June. 2023*

Indian Institute of Technology Gandhinagar — *Gandhinagar, India*
B. Tech, Computer Science and Engineering, CPI $9.55/10$ - Institute Silver — *2017 - 2021*

PROFESSIONAL EXPERIENCE

Cruise — *Remote*
Position: PhD Intern, AI Robotics — *July - Sept 2024*
- Built an unsupervised pipeline to surface edge-case road events from AV logs, supporting edge-case discovery
- Developed a VAE variant using Cruise's frozen internal perception model embeddings to cluster similar events
- Evaluated the model's ability to zero-shot label road events in an unsupervised manner
- Created PoC for end-to-end data extraction and training pipeline using Google BigQuery for scalable training and inference
- Introduced LSH for efficient event indexing in standard databases, eliminating the need for specialized vector databases

The Trade Desk — *Irvine*
Position: Software Engineer Intern — *June - Sept 2022*
- Built a scalable end-to-end ML pipeline (Scala + Spark) to estimate per-customer bid prices for real-time ad bidding
- Designed per-advertiser regression models to predict conversion probability and user monetary value
- Developed a distributed implementation to handle highly skewed advertiser data, for ingestion, training and evaluation.
- Defined performance metrics and built data pipelines to generate actionable insights for optimized bidding strategies

Gryt India Pvt Ltd — *Remote*
Position: Software Engineering Intern — *May-Oct. 2020*
- Designed and implemented backend API modules for an exercise management system using Django
- Developed a video-based exercise step detection algorithm using pose estimation techniques
- Deployed Amazon SageMaker solutions on AWS for rapid experimentation and iteration of the core pose detection model

RESEARCH EXPERIENCE

UC San Diego — *San Diego, California*
Graduate Student Researcher — *2022 - 2026*
- GHOST: Scalable self-supervised pipeline for trajectory estimation from monocular dashcam videos
- GAMMS: A scalable graph-based multi-agent simulator, enabling fast evaluation of agent behaviors
- MaD: Multi-view merging and disentanglement algorithm for sample-efficient, robust robotic manipulation policies
- InfoMARL: Attention-based MARL method to enable coordinated multi-agent behavior with full parameter sharing
- BOIL: A scalable method using environment structure to guide multi-agent strategies, outperforming heuristics

IIT Gandhinagar — *Gandhinagar, India*
Undergraduate Student Researcher — *2018 - 2021*
- Evaluated capsule networks on routing and squash functions, providing insights to improve performance
- Analyzed how urban travel patterns influenced the spread of SARS-CoV-2 in realistic city settings
- Survey on Data-Driven Online Advertising: Reviewed user profiling, audience segmentation, real-time bidding, and privacy
- Developed an approximate detection method using locality sensitive hashing for gravitational wave detection

SELECTED PUBLICATIONS

- Abdulaziz Almuzairee, **Rohan Patil**, Dwait Bhatt, Henrik I. Christensen
  Merging and Disentangling Views in Visual Reinforcement Learning for Robotic Manipulation — *CoRL* — *2025*
- **Rohan Patil**, Alexander Langley, Henrik Christensen
  Scaling up multi-agent patrolling in urban environments. — *Proc. of SPIE Vol. 12544* — *2023*
- **Rohan Patil**, Raviraj Dave, Harsh Patel, Viraj M Shah, Deep Chakrabarti, Udit Bhatia
  Assessing the Interplay between travel patterns and SARS-CoV-2 outbreak in realistic urban setting — *Applied Network Science* — *2021*
- Rithwik Kukunuri, Anup Aglawe, Jainish Chauhan, Kratika Bhagtani, **Rohan Patil**, Sumit Walia, Nipun Batra
  EdgeNILM: Towards NILM on Edge devices — *BuildSys* — *2020*

TECHNICAL SKILLS

Programming Python, C/C++, LaTeX, Verilog, Rust, Go, SQL, Scala
Web Development Django, CSS, HTML5, JavaScript, GraphQL
Libraries PyTorch, TensorFlow, Numpy, Pandas, Jupyter, Scipy, ROS

OPEN SOURCE PROJECTS

- GAMMS: Graph based Adversarial Multiagent Modelling Simulator - *git:gammsim/gamms* *2025*
  - Scalable graph-based multi-agent simulation framework for rapid environment and agent prototyping
  - Flexible API for defining agents, dynamics, and adversarial interactions
  - Lightweight design with built-in visualization and ML integration support
- Managed: Automate GPU allocation for Pytorch - *git:bridgesign/managed* *2023*
  - Provides ‘ManagedTensor‘, a PyTorch-compatible tensor class that automates multi-GPU allocation and movement
  - Transparently handles device placement and tensor transfers between CPU and GPUs, reducing management
  - Enables parallel experiments on multi-GPU machines without explicit device specification for each tensor