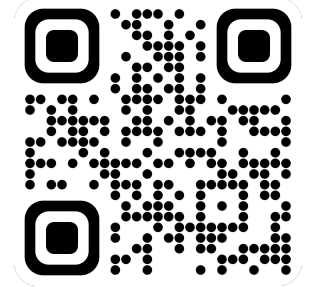


Zeel B Patel

Date of Birth: 04 Aug 1996 (28 years old)
Nationality: Indian
Website: <https://patel-zeel.github.io/>

Email: patel_zeel@iitgn.ac.in
GitHub: <https://github.com/patel-zeel>



EDUCATION

- **PhD in Computer Science,** *Jan 2020 - Present*
Research Topic: Probabilistic Machine Learning for Environment Modeling and Sensor Placement.
Advisor: [Nipun Batra](#)
CPI: 9.7/10
IIT Gandhinagar, Gujarat, India
- **M.Tech (Specialization: Smart Manufacturing),** *Aug 2017 - May 2019*
CGPA: 9.17/10
IIITDM Kancheepuram, Chennai, India

SELECTED AWARDS

[Microsoft Research India PhD Fellowship Award](#). Unrestricted grant of 10 lakh INR. 2024

BOOK CONTRIBUTIONS

- **Probabilistic Machine Learning: Advanced Topics:** <https://probml.github.io/pml-book/book2.html>
I co-authored Section 34.7 (Active learning) with Dr. Kevin Murphy
- **Code-First-ML:** <https://code-first-ml.github.io/>
This book is a work-in-progress joint effort with my advisor and Prof. [Ashish Tendulkar](#) to pragmatically explain ML concepts with interactive codes and visualizations.

SOFTWARE DEVELOPMENT EXPERIENCE

- **Google Summer of Code** *Jun 2022 - Sep 2022*
Organization: Google
Mentor: [Kevin P Murphy](#)
Project: [Develop JAX examples and demos for an ML upcoming textbook and tightly integrate codebase with the book](#)
GitHub repo: <https://github.com/probml/pyprobml>
Final report: <https://patel-zeel.github.io/gsoc22>

PUBLICATIONS ([GOOGLE SCHOLAR PROFILE](#))

Selected Peer-reviewed articles

1. **Zeel B Patel**, Palak Purohit, Harsh Patel, Shivam Sahni, Nipun Batra
[Accurate and Scalable Gaussian Processes for Fine-grained Air Quality Inference](#)
AAAI 2022 (CORE A* - 15% acceptance rate)
GitHub repo: <https://github.com/patel-zeel/AAAI22>
2. Sachin Chauhan, **Zeel B Patel**, Sayan Ranu, Rijurekha Sen, Nipun Batra
[Fine-Grained Spatio-Temporal Particulate Matter Dataset From Delhi For ML based Modeling](#)
In NeurIPS 2023 Datasets and Benchmarks (CORE A* - 32.7% acceptance rate)
3. Rishiraj Adhikary, **Zeel B Patel**, Tanmay Srivasatava, Nipun Batra, Mayank Singh, Udit Bhatia, Sarath Guttikunda
[Vartalaap: What Drives #AirQuality Discussions: Politics, Pollution or Pseudo-science?](#)
CSCW Journal 2021 (CORE A)
GitHub repo: <https://github.com/rishi-a/Vartalaap>

4. Karm Patel, Rishiraj Adhikary, **Zeel B Patel**, Nipun Batra, Sarath Guttikunda
Samachar: News Media on Air Pollution in India
COMPASS 2022
GitHub repo: <https://github.com/karm-patel/Samachar-News-media-on-air-pollution>

Symposium, Workshop papers and Posters

1. Yash Bachwana, Khush Shah, Nitish Sharma, **Zeel B Patel**, Nipun Batra, Sarath Guttikunda
VayuBuddy: LLM-powered natural language interface for exploring and understanding air pollution data
ACM COMPASS Posters 2024
2. Rishabh Mondal, Shataxi Dubey, Vannsh Jani, Shrimay Shah, Suraj Jaiswal, **Zeel B Patel**, Nipun Batra
Eye in the Sky: Detection and Compliance Monitoring of Brick Kilns using Satellite Imagery
ACM COMPASS Posters 2024
3. Aditi Agarwal, Suraj Jaiswal, Madhav Kanda, Dhruv Patel, Rishabh Mondal, Vannsh Jani, **Zeel B Patel**, Nipun Batra, Sarath Guttikunda
Towards Scalable Identification of Brick Kilns from Satellite Imagery with Active Learning
NeurIPS Workshop on Adaptive Experimental Design and Active Learning in the Real World 2023 (CORE A*)
4. **Zeel B Patel**, Nipun Batra, Kevin Murphy
Uncertainty Disentanglement with Non-stationary Heteroscedastic Gaussian Processes for Active Learning
NeurIPS Workshop on Gaussian Processes, Spatiotemporal Modeling, and Decision-making Systems 2022 (CORE A*)
5. Aadesh Desai, Eshan Gujarathi, Saagar Parikh, Sachin Yadav, **Zeel B Patel**, Nipun Batra
Deep Gaussian Processes for Air Quality Inference
Young Researchers' Symposium, CODS-COMAD 2023
6. Aadesh Desai, Gautam Vashishtha, **Zeel B Patel**, Nipun Batra
Challenges in Gaussian Processes for Non Intrusive Load Monitoring
NeurIPS Workshop on Gaussian Processes, Spatiotemporal Modeling, and Decision-making Systems 2022 (CORE A*)
7. **Zeel B Patel**, Nipun Batra
Towards Active Air Quality Station Deployment
SubSetML Workshop, ICML 2021 (CORE A*)
8. **Zeel B Patel***, S Deepak Narayanan*, Apoorv Agnihotri, Nipun Batra
Poster: A toolkit for spatial interpolation and sensor placement
ACM SenSys 2020 (CORE A*)
GitHub repo: <https://github.com/sustainability-lab/polire>
9. **Zeel B Patel**, Nipun Batra
Active Learning: A Visual Tour
3rd Workshop on Visualization for AI Explainability, IEEE VIS 2020 (CORE A)
Weblink: <https://patel-zeel.github.io/active-learning-visualization/>

AWARDS

Awards

- Microsoft Research India PhD Award. Unrestricted grant of 1 million INR. 2024
- Outstanding Graduate Teaching Fellow award in Probabilistic Machine Learning course. Fall 2022

IIT Gandhinagar

Registration grants

- NeurIPS 2022
- GPSS 2022
- AAAI 2022

- ICML 2021
 - IEEE VIS 2020
- Helped advisor with
- Google Compute grant 2021 (\$5000 credits in Google Cloud Platform)

INVITED TALKS

Google Global Air Quality Summit

13th Nov, 2024

Topic: AirChat: LLM-Powered Chatbot System to Democratize Urban Air Quality Information

App Demo: <https://sustainabilitylabiitgn-vayubuddy.hf.space>

Gurugram, India

Air Sensors International Conference

26th Aug, 2022

Topic: Accurate and Scalable Gaussian Processes for Fine-grained Air Quality Inference

Organized by CSTEP, India and UC DAVIS

Bengaluru, India

OPEN SOURCE LIBRARIES

ASTRA: <https://github.com/sustainability-lab/ASTRA>

"AI for Sustainability" Toolkit for Research and Analysis. We use this for research at our [lab](#)

BIJAX: <https://github.com/patel-zeel/bijax>

Bayesian Inference in JAX

GPAX: <https://github.com/patel-zeel/gpax>

Gaussian processes in JAX

skgpytorch: <https://github.com/patel-zeel/skgpytorch>

Scikit-learn like interface for GPyTorch

SELECTED OPEN SOURCE CONTRIBUTIONS

supervision (Roboflow): <https://github.com/roboflow/supervision>

- Helped in supporting Oriented Bounding Boxes Object Detection in supervision.

<https://github.com/roboflow/supervision/pull/1502>

matplotlib: <https://github.com/matplotlib/matplotlib>

- modified matplotlib internals to make plotting significantly faster with PyTorch and JAX arrays.

<https://github.com/matplotlib/matplotlib/pull/25887>

Stheno: <https://github.com/wesselb/stheno>

- Added a sparse Gaussian process method called FITC¹

<https://github.com/wesselb/stheno/pull/17>

GPyTorch: <https://github.com/cornellius-gp/gpytorch>

- Added metrics module to GPyTorch

<https://github.com/cornellius-gp/gpytorch/pull/1870>

- Added Type hints and exceptions in kernels

<https://github.com/cornellius-gp/gpytorch/pull/1802>

INDUSTRIAL EXPERIENCE

Data Scientist in R&D team

Jun 2019 - Dec 2019

Inspirisys Solutions Ltd., Chennai, India

¹Edward Snelson and Zoubin Ghahramani. Sparse Gaussian processes using pseudo-inputs. In Y. Weiss, B. Schölkopf, and J. Platt, editors, Advances in Neural Information Processing Systems, volume 18. MIT Press, 2006

TEACHING EXPERIENCE

Graduate Teaching Fellow (teaching a course along with the instructor)

- **Probabilistic Machine Learning**

IIT Gandhinagar

Fall 2022

Teaching Assistant

- **Probabilistic Machine Learning**

IIT Gandhinagar

Fall 2023

- **Machine Learning**

IIT Gandhinagar

Spring 2023

- **Machine Learning**

IIT Gandhinagar

Spring 2022

Guest lectures

- **Introduction to Active Learning**

Ubiquitous computing, IIT Gandhinagar

Fall 2021

- **Introduction to Bayesian Machine Learning**

Machine Learning, IIT Gandhinagar

Spring 2021

SERVICE

Reviewer

- Annual Conference on Neural Information Processing Systems (CORE A*)

2024

- Association for the Advancement of Artificial Intelligence (AAAI) (CORE A*)

2024

- Artificial Intelligence and Statistics (AISTATS) (CORE A)

2023

- ACM COMPASS Posters and Demos

2021

- The ReScience C journal