

# Zeel B Patel

Date of Birth: 04 Aug 1996  
Nationality: Indian  
Website: <https://patel-zeel.github.io/>  
Email: [patel\\_zeel@iitgn.ac.in](mailto:patel_zeel@iitgn.ac.in)

Address: 5/201, GBG AI/ML Lab,  
IIT Gandhinagar, Gujarat, India - 382355  
GitHub: <https://github.com/patel-zeel>

## EDUCATION

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### PhD in Computer Science,

Jan 2020 - Present

Research Topic: Developing ML methods for fine-grained air quality inference and active station deployment.

Advisor: Nipun Batra

CGPA: 9.59/10.0

IIT Gandhinagar, Gujarat, India

### M.Tech. in Mechanical Engineering (Specialization: Smart Manufacturing),

Aug 2017 - May 2019

CGPA: 9.17/10.0

IIITDM Kancheepuram, Chennai, India

## PUBLICATIONS (GOOGLE SCHOLAR PROFILE)

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### 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*  
To appear: AAAI 2022 (CORE A\*)  
GitHub repo: <https://github.com/patel-zeel/AAAI22>
2. Rishiraj Adhikary, **Zeel B Patel**, Tanmay Srivasatava, Nipun Batra, Mayank Singh, Udit Bhatia  
*Vartalaap: What Drives #AirQuality Discussions: Politics, Pollution or Pseudo-science?*  
CSCW 2021 (CORE A)  
GitHub repo: <https://github.com/rishi-a/Vartalaap>
3. Karm Patel, Rishiraj Adhikary, **Zeel B Patel**, Nipun Batra  
*Samachar: News Media on Air Pollution in India*  
COMPASS 2022  
GitHub repo: <https://github.com/karm-patel/Samachar-News-media-on-air-pollution>

### Posters and Workshop papers

1. **Zeel B Patel**, Nipun Batra  
*Towards Active Air Quality Station Deployment*  
SubSetML Workshop, ICML 2021 (CORE A\*)
2. **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>
3. **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/>

### Under submission

1. Palak Purohit, **Zeel B Patel**, Nipun Batra  
*Re: Stochastic Gradient Descent in Correlated Settings: A Study on Gaussian Processes*  
ReScience Journal
2. **Zeel B Patel**, Deepak Narayanan, Apoorv Agnihotri, Nipun Batra  
*Re: Comparison of spatial interpolation methods for the estimation of air quality data*  
ReScience Journal
3. **Zeel B Patel**, Nipun Batra  
*Re: high-resolution daily gridded meteorological dataset for Serbia made by random forest spatial interpolation*  
ReScience Journal

## INTERSHIPS

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### Google Summer of Code

Jun 2022 - Sep 2022

Organization: TensorFlow

Mentor: Kevin P Murphy

Project (link attached): Develop JAX examples and demos for an ML upcoming textbook

GitHub repo: <https://github.com/probml/pyprobml>

## MAJOR OPEN SOURCE CONTRIBUTIONS

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

- Added a sparse Gaussian process method called FITC<sup>1</sup>  
<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>

**Scikit-learn:** <https://github.com/scikit-learn/scikit-learn>

- Accelerated a slow example in scikit-learn  
<https://github.com/scikit-learn/scikit-learn/pull/21673>

**PyMC:** <https://github.com/pymc-devs/pymc>

- Added a few distribution moments to pymc  
<https://github.com/pymc-devs/pymc/pull/5173>  
<https://github.com/pymc-devs/pymc/pull/5154>
- Corrected formula (added missing log)  
<https://github.com/pymc-devs/pymc-examples/pull/64>

## ONLINE BOOKS

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**Code-First-ML:** <https://code-first-ml.github.io/>

This book is a joint effort with my advisor and Prof. Ashish Tendulkar to pragmatically explain ML concepts with interactive codes and visualizations. Currently, we are refactoring it as a mirror copy of probabilistic machine learning book by Dr. Kevin Murphy.

## AWARDS

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Registration grants

AAAI 2022

ICML 2021

IEEE VIS 2020

Helped advisor with

Google Compute grant 2021 (\$ 5000 credits in Google Cloud Platform)

## INDUSTRIAL EXPERIENCE

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### Data Scientist in R&D team

Jun 2019 - Dec 2019

Inspirisys Solutions Ltd., Chennai, India

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<sup>1</sup>Edward 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

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Guest lectures

**Introduction to Active Learning**

*Ubiquitous computing, IIT Gandhinagar*

*Fall 2021*

**Introduction to Bayesian Machine Learning**

*Machine Learning, IIT Gandhinagar*

*Spring 2021*

Teaching Assistant

**Machine Learning**

*IIT Gandhinagar*

*Spring 2022*

## SERVICE

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**Reviewer**

- The ReScience C journal
- ACM COMPASS Posters and Demos

*2021*