

Zeel B Patel

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EDUCATION

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)

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. 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, 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
2. 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
3. **Zeel B Patel**, Nipun Batra
Towards Active Air Quality Station Deployment
SubSetML Workshop, ICML 2021 (CORE A*)
4. **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>
5. **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 review

1. **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

2. Aadesh Desai, Gautam Vasistha, **Zeel B Patel**, Nipun Batra
Uncertainty Disentanglement with Non-stationary Heteroscedastic Gaussian Processes for Active Learning
NeurIPS Workshop on Gaussian Processes, Spatiotemporal Modeling, and Decision-making Systems Challenges in Gaussian Processes for Non Intrusive Load Monitoring

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

INTERNSHIPS

Google Summer of Code

Jun 2022 - Sep 2022

Organization: TensorFlow

Mentor: Kevin P Murphy

Project: Develop JAX examples and demos for an ML upcoming textbook

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

Final report: <https://patel-zeel.github.io/gsoc22>

MAJOR OPEN SOURCE CONTRIBUTIONS

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>

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>

ONLINE BOOKS

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.

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

AWARDS

Registration grants

GPSS 2022

AAAI 2022

ICML 2021

IEEE VIS 2020

Helped advisor with

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

INDUSTRIAL EXPERIENCE

Data Scientist in R&D team

Inspirisys Solutions Ltd., Chennai, India

Jun 2019 - Dec 2019

TEACHING EXPERIENCE

Graduate Teaching Fellow

Probabilistic Machine Learning

IIT Gandhinagar

Fall 2022

Teaching Assistant

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

– Artificial Intelligence and Statistics

2023

– ACM COMPASS Posters and Demos

2021

– The ReScience C journal