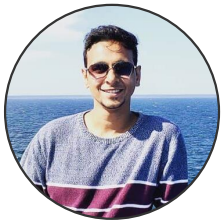
Prakhar **Verma**

Machine Learning Researcher · Aalto University · SpectacularAI

Jämeräntaival 11 J, 205, Espoo, Finland.

(+358) 0466144806 | prakhar.verma7@gmail.com | www.prakharverma.github.io | vermaprakhar



Education

Aalto University — *Finland*

Master of Science (M.Sc.) — *2019 - 2021*

- Major in Machine Learning, Data Science, and Artificial Intelligence
- Minor in Mathematics
- 4.7/5 (Pass with Honors)

Uttarakhand Technical University — *India*

Bachelor of Technology (B.Tech.) — *2012 - 2016*

- Specialization in Information Technology
- 79.03% (First Division with Honors)

Professional Experience

SpectacularAI — *Espoo, Finland*

Research Engineer (Part-time) — *September 2021 - Present*

Consultant for an electronic firm researching on methods to incorporate uncertainty in their deep learning models; making them robust.

Aalto University — *Espoo, Finland*

Research Assistant — *April 2020 - Present*

Member of the AaltoML group focusing on probabilistic machine learning to develop learning methods and efficient approximate inference methods for dynamic systems and stochastic differential equation (SDE) models.

Teaching Assistant — *Spring 2020, 2021*

Deep Learning (CS-E4890): One of the teaching assistants responsible for assignments creation and supervision along with the professor.

TomTom — *Pune, India*

Software Engineer (R&D) — *July 2016 - August 2019*

- **Automatic Feature Extraction from Satellite Imagery**
  Researched and developed a semantic segmentation solution for extracting map features from satellite imagery and automatically ingesting them into the database removing human-in-the-loop.
- **Raah: Real-time Map**
  Developed a POC for a real-time map vector tile server which later got converted into an open platform product.
- **On-field map reporting surveying tool**
  Developed an ArcGIS plugin used daily by the surveyors across the globe for field surveying and reporting.

Publications

- **Prakhar Verma**, Vincent Adam, Arno Solin. Sparse Gaussian processes for stochastic differential equations. *The Symbiosis of Deep Learning and Differential Equations (DLDE), NeurIPS Workshop, 2021.*
- Arno Solin, Ella Tamir, **Prakhar Verma**. Scalable Inference in SDEs by Direct Matching of the Fokker–Planck–Kolmogorov Equation. *Advances in Neural Information Processing Systems 35* (NeurIPS), 2021.
- Fuzail Palnak^{+}, Kshitij Nikhal^{+}, **Prakhar Verma**$^{+}$, Ravi Panchani^{+}, and Sagar Rohankar^{+}. M.A.G.E.C: machine assisted geometry extraction and creation. *Twelfth International Conference on Machine Vision* (ICMV 2019).

Theses

- Verma, P. (2021). Sparse Gaussian processes for stochastic differential equations [Master's thesis]. Aalto University. PDF
- Verma, P. (2016). Development of automated GIS Tools on various platforms [Bachelor's thesis]. Uttarakhand Technical University, TomTom India. PDF

Skills & Interests

- Probabilistic machine learning, Gaussian processes, Bayesian learning, uncertainty quantification, deep learning, optimization
- Python, PyTorch, GPFlow, numPy, scikit-learn, JAX, AWS

Presentations

- Tensorflow case study on how convolution neural networks can be used to extract road networks and airports from satellite imagery and how TFServing can be used to host the models at Google Developers Group 2018
- An end-to-end machine learning framework to detect and extract essential map features from satellite imagery and ingest into the database without human-in-the-loop at GeoSpatial World Forum 2018

Accomplishments

- Awarded *"Dean Scholarship"* in *2020* and *2021* at Aalto University.
- Awarded *"Face of TomTom 2018"* for actively representing TomTom in conferences and promoting the brand.
- Winner of TomTom *"Innovation Day 2018"*, presented an artificial intelligence plugin which bridges the gap between machines and cartographers.
- Mentor at "TomTom External Hackathon 2018".
- *"Electronic Health Record"* idea was selected in Top 10 at a national event, "India Ideathon 2015".

Projects

Spectral Graph Analysis

Aalto University *November 2019*

The project aims to perform graph partitioning with the use of Spectral Clustering on social network graphs. The goal is to minimize the number of cuts while maintaining cluster size balance.
More details: Github Repository

Bayesian Statistics Global Warming

Aalto University *November 2019*

The goal of the project is to examine how much the sea level rise would affect the coastal cities of Finland.
More details: Github Repository

Speaker Adaptation

Aalto University *November 2019*

In this project, we present various speaker adaptation techniques based on recently developed training methods and their respective results by performance levels (word error rate percentage).
More details: Research Paper

More Projects

Github

https://github.com/prakharverma