

Ananth Mahadevan
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Profile

Postdoctoral researcher with extensive research experience in algorithmic data science and machine learning. Proven expertise in designing scalable data pipelines, with hands-on experience at leading institutions and organizations. Published author with a track record of impactful contributions to machine learning research and industry applications.

Skills

Programming Languages: Python, C/C++, Shell, R

Machine Learning: PyTorch, TensorFlow, JAX, CUDA, scikit-learn, NumPy, Pandas

Graph and Network Tools: NetworkX, PyTorch Geometric, SNAP

Database and Big Data: Apache Spark, Neo4J, MariaDB, Elasticsearch, Dagster

Miscellaneous: Excellent troubleshooting and debugging skills

Education

- **University of Helsinki** Helsinki, Finland
PhD in Computer Science Aug 2020 - Dec 2024
 - Doctoral Researcher in Algorithmic Data Science group
 - Supervisor: Prof. Michael Mathioudakis
 - **Thesis Topic:** Scaling and Maintaining Machine Learning Pipelines
- **Aalto University** Otaniemi, Finland
Master of Science in Machine Learning, Data Science and AI Sep 2018 - May 2020
 - Full Tuition Scholarship Student
 - **Thesis Topic:** Vote Prediction Models for Signed Social Network
- **R.V College Of Engineering** Bangalore, India
Bachelor of Engineering in Computer Science and Engineering Aug 2014 - May 2018
 - 3rd rank in department
 - **Thesis Topic:** Extract-Transform-Load of Financial Transaction Tax data using Elasticsearch

Work Experience

- **HPC-HD Project Researcher** Helsinki, Finland
University of Helsinki May 2022 - present
 - High Performance Computing for the detection and analysis of Historical Discourses (HPC-HD)
 - Collaboration between University of Helsinki, Aalto University and University of Turku
 - Implemented an **end-to-end data science pipeline** for analyzing millions of digitized historical documents
 - Utilized Apache Spark to scale up to 6× more raw data, and Dagster for workflow orchestration
- **Doctoral Researcher** Helsinki, Finland
University of Helsinki Aug 2020 - Dec 2024
 - Conducted research on Scaling and Maintaining Machine Learning Pipelines
- **Teaching Assistant** Helsinki, Finland
University of Helsinki Jan 2021 - Mar 2021
 - Worked with *Prof.* Michael Mathioudakis for the Network Analysis Course
 - Created and graded five assignments
 - Conducted four tutorials on advanced graph learning concepts

- **Research Assistant** Otaniemi, Finland
Aalto University May 2019 - May 2020
 - Worked with *Prof. Aristides Gionis* and *Bruno Ordozgoiti* in the Data Mining Group
 - **Wikipedia RfA Project**: predicting voter behaviour in Wikipedia elections networks
 - **Diversified Item Selection Project**: implemented and scaled up experiments
- **Teaching Assistant** Otaniemi, Finland
Aalto University Sep 2019 - Dec 2019
 - Worked with *Prof. Aristides Gionis* on the Algorithmic Methods of Data Mining course
 - Created three assignments and arranged exercise sessions
 - Managed and graded the course project on balanced graph clustering
- **Summer Thesis Worker** Bangalore, India
Goldman Sachs Jan 2018 - May 2018
 - Worked in the **Client Experience Engineering** team on **client email prioritization**
 - Used **Conditional Random Fields (CRFs)** to tag and remove *disclaimers* from client emails
 - Performed **sentiment analysis** and Named Entity Recognition(NER) on emails
 - Platforms Utilized: pycrfsuite, sklearn, Protobuf, spaCy, Stanford CoreNLP
- **Summer Analyst** Bangalore, India
Goldman Sachs May 2017 - July 2017
 - Worked in the **Tax Operations Technology** team
 - Imported large volume tax from DB2, Sybase IQ databases to **Elasticsearch** cluster
 - Set up, maintained and optimized multi-node Elasticsearch cluster in production environment

Hobbies and Extracurricular Activities

Parliamentary Debating

- **President** of Helsinki Debating Society (HDS) : Sep 2020 – Jan 2023
- **Finnish Debate Champion 2019** at FINDA University Championship 2019, Finland

Publications

- Ananth Mahadevan and Michael Mathioudakis. Cost-aware retraining for machine learning. *Knowledge-Based Systems*, 293:111610, 2024
- Ananth Mahadevan, Michael Mathioudakis, Eetu Mäkelä, and Mikko Tolonen. Optimizing a data science system for text reuse analysis. *arXiv*, 2024
- Yann Ryan, Ananth Mahadevan, and Mikko Tolonen. A comparative text similarity analysis of the works of bernard mandeville. *Digital Enlightenment Studies*, 1:28 – 58, 2023
- David Rosson, Eetu Mäkelä, Ville Vaara, Ananth Mahadevan, Yann Ryan, and Mikko Tolonen. Reception reader: Exploring text reuse in early modern british publications. *Journal of Open Humanities Data*, Apr 2023
- Ananth Mahadevan, Arpit Merchant, Yanhao Wang, and Michael Mathioudakis. Robustness of sketched linear classifiers to adversarial attacks. In *Proceedings of the 31st ACM International Conference on Information & Knowledge Management, CIKM '22*, pages 4319–4323, 2022
- Arpit Merchant, Ananth Mahadevan, and Michael Mathioudakis. Scalably using node attributes and graph structure for node classification. *Entropy*, 24(7), 2022
- Ananth Mahadevan and Michael Mathioudakis. Certifiable unlearning pipelines for logistic regression: An experimental study. *Machine Learning and Knowledge Extraction*, 4(3):591–620, 2022
- Bruno Ordozgoiti, Ananth Mahadevan, Antonis Matakos, and Aristides Gionis. Provable randomized rounding for minimum-similarity diversification. *Data Mining and Knowledge Discovery*, 36(2):709–738, March 2022