

Krishnateja Killamsetty

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RESEARCH INTERESTS

My research centers on developing techniques and algorithms that enable data-efficient, compute-efficient, and robust machine learning systems. My current work on data subset selection for efficient and generalizable machine learning leverages submodularity to achieve this goal in the context of supervised and semi-supervised learning scenarios. I am also interested in label-efficient machine learning through active and semi-supervised learning algorithms.

EDUCATION

The University of Texas at Dallas

Ph.D., Computer Science

4.0/4.0

December 2024

Indian Institute of Technology, Kharagpur

BE, Electronics and Communication Engineering

4.0/4.0

May 2015

EXPERIENCE

The University of Texas at Dallas, Richardson, Texas

Research Assistant

January 2020 – May 2021, August 2021- present

- Currently working on Data efficient Learning: Data Selection, Active Learning, and Data partitioning research Problems.
- Currently working on the Robust learning in the presence of Noise, Outliers, Class Imbalance, etc.
- Worked on the Labeling Functions and Data Programming research problems for NLP sentiment analysis.

Microsoft Research, Redmond (USA)

Research Intern

May 2021-August 2021

- Worked on developing machine learning models for screen understanding of GUI screens.
- Developed a data synthesis pipeline for GUI screens that can be used as training data for object detection and visual relationship detection models.
- Worked on visual relationship detection models for detecting the relations between UI elements in the screens.
- Currently working on a new performance-driven data synthesis pipeline for Visual relationship model training.
- Improved the efficiency of object detection model training using subset selection approaches.

Mercedes Benz Research and Development Private Limited, Bengaluru (India)

Data Scientist

February 2018 -December 2019

- Worked on developing machine learning models on data from different sensors like Lidar, Radar, Camera, etc. from the whole Mercedes Fleet
- Supplying insights by analyzing the vast data from Mercedes Cars to improve existing ADAS (Advanced Driver Assistance Systems) Algorithms of Daimler.
- Spatial Analysis of Mercedes Cars data to generate Hotspots throughout the world which helps find areas throughout-out the world where Driver Assist Functions are failing.
- Worked on Cloud-Based Technologies, Big Data Processing, Computer Vision, and Machine Learning Algorithms.

Robert Bosch Engineering and Business Solutions Pvt Ltd, Bengaluru (India)

Senior Software Engineer (Computer Vision)

July 2015-February 2018

- Worked on Signal Processing, Image Processing, and Computer Vision algorithms for Video-based Driver Assistance projects.
- Worked on Image Stitching and Harmonization Algorithms of Surround View Camera for BMW and Daimler.
- Worked on lane detection algorithms to detect lanes using video input, useful for functions like Lane Departure Warning and Lane Keep Assist.
- Developed a complete web-based Evaluation framework to evaluate Lane Detection Algorithms used in Bosch.

- Worked on Blind Image forgery detection research problems.
- Worked on High-frequency crystal oscillator design.

AWARDS, LEADERSHIP & ORGANIZATIONS

- July 2018: **ABCD (Above and Beyond the call of Duty) Award** from my Department in Mercedes Benz within six months of my joining
- June 2018: **Digital Life Day Product Innovation Excellence Award** from Manu Saale, Vice President of Daimler AG.
- November 2018: **Innovation Excellence Driver Award** from my Department in Mercedes Benz.

PUBLICATIONS

Google Scholar Profile: https://scholar.google.com/citations?user=Es7o_GIAAAJ&hl=en

* Indicates equal contribution

Pre-Prints

- Krishnateja Killamsetty, Guttu Sai Abhishek, Aakriti, Alexandre V. Evfimievski, Lucian Popa, Ganesh Ramakrishnan, Rishabh Iyer. “**AUTOMATA: Gradient Based Data Subset Selection for Compute-Efficient Hyper-parameter Tuning.**” <https://arxiv.org/abs/2203.08212>. arXiv [cs.LG], 2022. arXiv:2203:08212.
- Xujiang Zhao*, Killamsetty Krishnateja*, Rishabh Iyer, Feng Chen. “**Robust Semi-Supervised Learning with Out of Distribution Data.**” arXiv [cs.LG], 2021. arXiv:2010.03658.

Peer-Reviewed Publications (Conferences & Journals)

- Rishabh Tiwari, Krishnateja Killamsetty, Rishabh Iyer, Pradeep Shenoy. “**GCR: Gradient Coreset based Replay Buffer Selection for Continual Learning.**” <https://arxiv.org/abs/2111.11210>. To Appear in Conference on Computer Vision and Pattern Recognition, CVPR 2022.
- Ayush Maheshwari*, Krishnateja Killamsetty*, Ganesh Ramakrishnan, Rishabh Iyer, Marina Danilevsky, Lucian Popa. “**Learning to Robustly Aggregate Labeling Functions for Semi-supervised Data Programming.**” <http://arxiv.org/abs/2109.11410>. To Appear in Findings of the Association for Computational Linguistics: ACL 2022. (Long paper)
- Krishnateja Killamsetty*, Changbin Li*, Chen Zhao, Rishabh Iyer, Feng Chen. “**A Nested Bi-level Optimization Framework for Robust Few Shot Learning.**” <https://arxiv.org/abs/2011.06782>. To Appear in Thirty-Sixth AAAI Conference on Artificial Intelligence, AAAI 2022. (15% Acceptance Rate)
- Krishnateja Killamsetty, Xujiang Zhou, Feng Chen, and Rishabh Iyer. “**RETRIEVE: Coreset Selection for Efficient and Robust Semi-Supervised Learning.**” To Appear in Neural Information Processing Systems, NeurIPS 2021
- Suraj Kothawade, Nathan Beck, Krishnateja Killamsetty, Rishabh Iyer. “**SIMILAR: Submodular Information Measures Based Active Learning In Realistic Scenarios.**” To Appear in Neural Information Processing Systems, NeurIPS 2021
- Ayush Maheshwari, Oishik Chatterjee, Krishnateja Killamsetty, Ganesh Ramakrishnan, Rishabh Iyer. “**Semi-Supervised Data Programming with Subset Selection.**” In Findings of the Association for Computational Linguistics: ACL/IJCNLP 2021, Online Event, August 1-6, 2021, ACL/IJCNLP 2021:4640–4651. Findings of ACL. Association for Computational Linguistics, 2021. (Long paper)
- Krishnateja Killamsetty, Durga Sivasubramanian, Ganesh Ramakrishnan, Abir De, Rishabh Iyer. “**GRAD-MATCH: Gradient Matching based Data Subset Selection for Efficient Deep Model Training.**” In Proceedings of the 38th International Conference on Machine Learning, ICML 2021, 18-24 July 2021, Virtual Event, 139:5464–5474.

Proceedings of Machine Learning Research. PMLR, 2021. (21% acceptance rate)

- Krishnateja Killamsetty, Durga Sivasubramanian, Ganesh Ramakrishnan, Rishabh Iyer. **“GLISTER: Generalization based Data Subset Selection for Efficient and Robust Learning.”** In Thirty-Fifth AAAI Conference on Artificial Intelligence, AAAI 2021, Virtual Event, February 2-9, 2021, 8110–8118. AAAI Press, 2021. (21% Acceptance Rate)

Workshop Papers

- Krishnateja Killamsetty*, Changbin Li*, Chen Zhao, Rishabh Iyer, Feng Chen. **“A Nested Bi-level Optimization Framework for Robust Few Shot Learning.”** Fifth Workshop on Meta-Learning at the Conference on Neural Information Processing Systems, In Conjunction with NeurIPS 2021
- Savan Amitbhai Visalpara, Krishnateja Killamsetty, Rishabh Iyer. **“A Data Subset Selection Framework for Efficient Hyper-Parameter Tuning and Automatic Machine Learning.”** Workshop on Subset Selection in Machine Learning, SubSetML 2021, In Conjunction with ICML 2021
- Krishnateja Killamsetty, Durga Sivasubramanian, Baharan Mirzasoleiman, Ganesh Ramakrishnan, Abir De, Rishabh Iyer. **“A Gradient Matching Framework for Efficient Learning.”** Workshop on Hardware Aware Efficient Training, In Conjunction with ICLR 2021

Patents

- Boddeti Mohanvarakrishna, Gautam Raju, Krishnateja Killamsetty, Swadeep Kumar. **“SYSTEM AND METHOD FOR ASSIGNING RESPONSIBILITY SCORES TO USERS OF VEHICLE.”** Indian Patent (Application No: 201911022751)
- Boddeti Mohanvarakrishna, Gautam Raju, Krishnateja Killamsetty, Swadeep Kumar. **“SYSTEM AND METHOD FOR PREDICTING BEHAVIOUR OF A USER OF A VEHICLE.”** Indian Patent (Application No: 201911022492)
- Boddeti Mohanvarakrishna, Gautam Raju, Krishnateja Killamsetty, Kishore Subramanian. **“METHOD AND SYSTEM FOR EXTRACTING AND GENERATING CRITICAL TEST SCENARIOS FOR AUTONOMOUS VEHICLES.”** Indian Patent (Application No: 201841048116)

Software

- Krishnateja Killamsetty, Dheeraj N Bhat, Rishabh Iyer. **“CORDS: COResets and Data Subset selection.”** GitHub repository. GitHub, 2021.
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PROFESSIONAL ACTIVITIES

I have served as a Program Committee member for several conferences.

- Program Committee member for Association for the Advancement of Artificial Intelligence, AAAI 2022
- Program Committee member for Conference on Neural Information Processing Systems, NeurIPS 2021
- Program Committee member for Association for the Advancement of Artificial Intelligence, AAAI 2021
- Program Committee member for Conference on Artificial Intelligence and Statistics, AISTATS 2021

TECHNICAL SKILLS

- Adept in programming skills (Python, C++, C, MATLAB, PyTorch, TensorFlow, Pandas, NumPy)
- Good Knowledge of Machine Learning, Computer Vision, and Deep Learning Algorithms.
- Able to develop advanced and sophisticated algorithms for various machine learning applications to tackle problems in areas such as Driverless Cars.
- Have a good knowledge of challenges in the domain of driverless cars currently and am thorough with the newer technologies in the same domain

PRESENTATIONS

- **“Scenario Simulation Engine,”** Digital Life Day Daimler at Bengaluru & Germany to “Mr. Dieter Zetsche,” CEO of Daimler and “Mr. Ola Kallenius,” R&D Head at Daimler AG and “Mr. Manu Saale,” Vice president at Daimler AG

and other high-level management in Daimler.