Vihari Piratla

PhD Student, IIT Bombay

vihari@cse.iitb.ac.in

Research Focus

I am interested in studying the performance of Machine Learning systems beyond the well-represented training distributions. Towards this objective, I work on generalization, evaluation and adaptation aspects of ML algorithms on unseen distributions.

Education

- **Indian Institute of Technology, Bombay** *June 2017 - Present*
  M.Tech. + Ph.D. Dual Degree, Department of Computer Science GPA: 9.75/10
  Advisors: Prof. Sunita Sarawagi and Prof. Soumen Chakrabarti
  ☆ Google PhD Fellow ☆ Department rank one in the M.Tech. class.
  Expected Graduation date in July 2022.

- **Indian Institute of Technology, Mandi** *2010 - 2014*
  B.Tech. Department of Computer Science GPA: 8.34/10

Scholastic Achievements

- One of the sixteen global recipients of Google PhD fellowship in Machine Learning in 2020.
- Selected to receive Prime Minister's Fellowship for Doctoral Research, 2021 (declined).
- Google, Microsoft travel grants to present at ACL 2019; ICLR 2018 Travel Award.
- Department Rank one among 100 students in the M.Tech. computer science batch of 2019.
- Represented IIT Mandi, as a member of a team, in ACM International Collegiate Programming Contest 2012-13 Kharagpur and 2013-14 Kanpur regional.
- Qualified for the Indian National Mathematical Olympiad after clearing Regional Mathematical Olympiad'09 with a state rank of 26.

Publications

Preprints / Under Review

- Focus on the Common Good: Group Distributional Robustness Follows
  V Piratla, P Netrapalli, S Sarawagi

Conference

- Active Assessment of Prediction Services as Accuracy Surface Over Attribute Combinations
  V Piratla, S Chakrabarty, S Sarawagi
  Neural Information Processing Systems (NeurIPS) 2021.

- Training for the Future: A Simple Gradient Interpolation Loss to Generalize Along Time
  A Nasery, S Thakur, **V Piratla**, A De, S Sarawagi
  Neural Information Processing Systems (NeurIPS) 2021.

- NLP Service APIs and Models for Efficient Registration of New Clients
  S Shah, **V Piratla**, S Sarawagi, S Chakrabarti
  Findings at Empirical Methods in Natural Language Processing (EMNLP), 2020.

- Efficient Domain Generalization via Common-Specific Low-Rank Decomposition
  V Piratla, P Netrapalli, S Sarawagi
  International Conference on Machine Learning (ICML) 2020.

- Topic Sensitive Attention on Generic Corpora Corrects Sense Bias in Pretrained Embeddings
  V Piratla, S Sarawagi, S Chakrabarti
  Annual Meeting of the Association for Computational Linguistics (ACL) 2019 (Oral).

- Parallel iterative edit models for local sequence transduction
  A Awasthi, S Sarawagi, R Goyal, S Ghosh, **V Piratla**
  Empirical Methods in Natural Language Processing (EMNLP), 2019.

- Generalizing Across Domains via Cross-Gradient Training
  S Shankar*, **V Piratla***, S Chakrabarti, S Chaudhuri, P Jyothi, S Sarawagi [Shared first author]
  International Conference on Learning Representations (ICLR) 2018.

Workshop

- Untapped Potential of Data Augmentation: A Domain Generalization Viewpoint
  V Piratla, S Shankar
  ICML 2020 Workshop on Uncertainty & Robustness in Deep Learning.

- Historical Research Using Email Archives
  S Hangal, **V Piratla**, C Manovit, P Chan, M Lam, G Edwards
  Conference on Human Factors in Computing Systems 2015 Case Studies.

Talks

- Research Challenges when scaling to millions of users through Prediction Service APIs [talk][slides]
  Presented at Trust ML Rising Star Spotlights Series

- Efficient Domain Generalization via Common-Specific Low-Rank Decomposition [talk][slides]
  Presented at ICML 2020 Conference

- Topic Sensitive Attention on Generic Corpora Corrects Sense Bias in Pretrained Embeddings. [talk][slides]
  Presented at ACL, Florence

Development Experience

ePADD: Digital Archival Project Aug'14 – Feb'16
Stanford University Libraries

- ePADD is an open-source project to develop tools for collecting and processing of digital archives.
- Contributed tens of thousands of lines of code for smooth functioning of the application across various operating systems, browsers, compute hardware, and for processing archives that are several gigabytes large.

☆ The features I contributed continue to be a big part of the project to this day: browse here.

Academic Service/Experience

- **Teaching Assistant:** Advanced Machine Learning, Digital Image Processing, Organization of Web Information, Data Interpretation and Analysis, Learning with Graphs, Parallel Programming Paradigms.
- **Student Volunteer:** NeurIPS 2021, ICML 2020, ACL 2019.
- **Reviewer:** ICLR 2022, NeurIPS 2021, ICML 2021, AAAI 2020, IEEE Transactions on Multimedia.

Professional Experience

- Research Intern Aug'19 - Nov '19
  Mentor: Dr. Praneeth Netrapalli *Microsft Research, India*
  Worked on algorithms that enable efficient transfer and generalization to new domains.
  ☆ Work done during the internship is published in ICML 2020.

- Project Staff — Oct'16 - July'17
  Mentor: Prof. Sunita Sarawagi — *IIT Bombay*
  Contributed features to a complaint management system, such as text or image based automatic complaint categorization, and deduplication.

- Research Member Staff — June'14 - Feb'16
  Mentor: Dr. Sudheendra Hangal — *Amuse Labs*
  Worked on a digital archival project called ePADD and developed the following features. (1) A fine-grained entity recognizer robust to domain shifts from different archives using Binomial Mixture Models and Distant Supervision. (2) Cross document co-referencing and entity linking using context cues.

- Research Intern — June'13 - Aug'13
  Mentor: Navneeth S — *GE Global Research*
  Implemented software for distortion correction and 3D registration of Ultrasound images.

Technical Skills

- **Programming & Scripting**: Java, Python, C, Shell Scripting, PERL
- **Technologies** : Spring, HTML, CSS, JavaScript, Lucene
- **Programming Libraries**: PyTorch, GPyTorch, Tensorflow, NumPy
- **Languages**: English, Telugu, Hindi

Extra Curricular Activities

- At IIT Bombay's PG sports events conducted in 2018, I won (or was part of a team that won) **Gold** in the 400m relay, **Silver** in 100m relay, **Bronze** in Volleyball, and finished fourth in the Long Jump.
- I finished 6th in the 2017 and 2018 PG sports 5km running event.
- Trekker with medium level expertise.

References

Prof Sunita Sarawagi	Advisor	`sunita@cse.iitb.ac.in`	Professor, IIT Bombay
Prof Soumen Chakrabarti	Co-Advisor	`soumen@cse.iitb.ac.in`	Professor, IIT Bombay
Dr Praneeth Netrapalli	Collaborator	`praneethn@gmail.com`	Research Scientist, Google Research