

Anish Acharya

Website [Google Scholar](#) [Linkedin](#) [GitHub](#)

• anishacharya@utexas.edu • anisha@uci.edu • (352) 871 3606

Education

- **University of Texas, Austin** Austin, TX
PhD, Electrical Engg. and Computer Science Fall. 2019 – Present
Advisor: **Inderjit Dhillon and Sujay Sanghavi**
- **University of California, Irvine** Irvine, CA
M.S. Electrical Engg. and Computer Science Sept. 2013 – Dec. 2014
- **Jadavpur University** Kolkata, India
B.E. Electronics and Instrumentation Engineering May. 2009 – March. 2013
Advisor: **Amitava Gupta and Shantanu Das**

Core Technical Skills

- **Interests:** Robust Machine Learning, Self Supervised Learning, Deep Learning, Federated Learning, Natural Language Processing.
- **Programming Languages-** Python, C++, Shell, MATLAB
- **Deep Learning Framework-** PyTorch, TensorFlow, Keras

Work Experience

- **Meta** Menlo Park, CA
Student Researcher (Part Time) Fall, 2022
Research Scientist (Intern) Summer, 2022
Student Researcher (Part Time) Fall, 2021
Research Scientist (Intern) Summer, 2021
 - I am working on online low resource training to scale up Facebook’s recommendation models. In particular, we are looking at fundamental problems in contrastive learning applied to weakly supervised prediction task.
- **Microsoft Research** Redmond, WA
Research Scientist (Intern) Summer, 2020
 - As part of the **Speech and Dialog Research Group** of MSR. My research was focused on developing algorithms to train large scale robust models in Federated Learning setting.
Microsoft Research released my intern work as an **open source** Federated Learning Platform **OpenMSFTL**.
- **Amazon Alexa AI** Sunnyvale, CA
Applied Scientist (Full Time) June 2016 - July 2019
 - As an Applied Scientist in the **Amazon Alexa AI Group**. I was involved in proposing, designing and implementing NLP models shared across all alexa devices. Some of my *notable live (public) launches* include: Timers, Alarms, Reminders, Calendar, Echo Show, Communications.
I was also one of the *founding scientists* of **Alexa Conversational AI** where we launched **Alexa Conversations**.
In the News: My work at Amazon has been featured at: **Forbes**, **CNN**, **Packt Blog**, **VentureBeat**, **HakerNews**, **Amazon Science (2019)**, **Amazon Blog (2019)**, **Amazon Science (2021)**,.
- **eBay inc** San Jose, CA
Data Scientist (Consultant) Nov 2015 - June 2016
 - As part of the Customer Insights and Analytics (CSI) group , I worked on developing ML algorithms to personalize buyer search and personalized eBay advertising.
- **Schlumberger** Houston, Tx
Data Scientist (Full Time) March, 2015- Nov 2015
 - As one of the early research scientists in the newly formed **Digital Transformations Services** group some of my work include: early failure prediction of deployed oil service instruments, oil level prediction from various sensor data generated from different parts of oil extraction life-cycle.
- **FEM inc (acquired by Nielsen Gracenote)** Los Angeles, CA
Data Engineer (Full Time) Winter, 2015
 - As the first scientist of the company, I worked with the co-founders on envisioning NLP models, designing content recommendation system using these models and building visualization tools for interactive online analytics dashboard.
- **Toyota technological Institute Chicago (TTIC)** Chicago, IL; Ann Arbor, MI
Visiting Researcher (Intern) Summer, 2014
 - We developed a real-time stereo algorithm to reconstruction 3D surrounding for autonomous car. Another extension was to develop a stereo evaluation benchmark based on slanted plane model of the surrounding. This project was developed for **Toyota Research in North America (TRINA)**.

• **University Of California Irvine**

Teaching Staff

Irvine,CA

2013-2014

- Performed teaching duties of the following courses: Discrete Time signals and systems (EECS 50 - UG), Advanced Engineering Electro-magnetics I (EECS 280A - Graduate), Introduction to Knowledge Management and software Engineering (EECS 118 - UG), Introduction to VLSI (EECS 119 - UG).

Academic Presentations

- Fall 2022. (Virtual) **Meta: Fundamental AI Research (FAIR)** (Invited Talk)
- Fall 2022. (Berkley, CA) **Simons Institute for the Theory of Computing: Data-Driven Decision Processes Workshop** (Poster)
- Fall 2022. (Virtual) **Meta: Ads ML Research** (Invited Talk)
- Summer 2022. (Eindhoven, Netherlands) **UAI 2022** (Spotlight, Poster)
- Summer 2022. (Baltimore, MD) **ICML 2022 - PODS** (Recorded Talk, Poster)
- Spring 2022. (Austin, TX) **6g@UT Forum** (Poster)
- Spring 2022. (Virtual) **AISTATS 2022** (Recorded Talk, Poster)
- Spring 2022. (Virtual) **University of Exeter - Department of Mathematics** (Invited Talk)
- Fall 2021. (Virtual) **Meta : Capacity Engineering Research** (Invited Talk)
- Fall 2021. (Virtual) University of Denver - Department of Computer Science (Guest Lecture)
- Fall 2021. (Berkley, CA) **Simons Institute for the Theory of Computing - IFML/CCSI Symposium** (Poster)
- Fall 2021. (Virtual) **Meta: Fundamental AI Research (FAIR)** (Invited Talk)
- Summer 2021. (Virtual) **Meta : Capacity Engineering Research** (Invited Talk)
- Spring 2021. (Virtual) **NSF-TRIPADS Workshop on Communication Efficient Distributed Optimization** (Poster)
- Summer 2020. (Virtual) **Microsoft: Azure AI** (Invited Talk)
- Fall 2019. (Austin, Tx) **UT Austin Graduate Research Showcase** (Poster)
- Fall 2019. (Austin, Tx) **Texas Wireless Summit** (Poster)
- Spring 2019. (Honolulu, Hawaii) **AAAI 2019** (Oral)
- Summer 2018. (Seattle, WA) **Amazon Machine Learning Conference** (Oral)

Honors and Awards

- **Conference Scholarship** to attend UAI-2022. Summer, 2022.
- **Meta PhD Research Fellowship** Finalist - AI HW/SW co-design (Press Release) Spring, 2022.
- **PhD Research Grant** (\$ 100,000) by **Meta inc.** Spring, 2022 - Spring, 2023.
- **MHRD Fellowship** by **Ministry of Human Resource Development, Govt. of India.** Fall, 2009 - Spring, 2013.
- **Governor's Medal** (Mamraj Agarwal Rashtriya Puraskar) recipient - West Bengal, India. Summer, 2007.

Inventions and Publications

Granted Patents

1. "Goal Oriented Dialog Generation using Dialog Template, API and Entity data" **United States Patent-11393454B1**, 2022
A. Acharya , A. Metallinou, T. Chung, S. Paul, S. Chandra, C. Lin, D. H. Tur, A. Mandal
2. "Natural Language Processing : Amazon Alexa AI" **United States Patent-10872601B1**, 2020
A. Acharya , A. Metallinou, R. Goel, I. Dhillon

Peer Reviewed Journal Articles.

1. "On the Benefits of Multiple Gossip Steps in Communication Constrained Federated Learning"
IEEE Transactions on Parallel and Distributed Systems (TPDS), 2021. [IEEE Xplore](#)
A. Hashemi, A. Acharya, R. Das, H. Vikalo, S. Sanghavi, I. Dhillon.
2. "Extending The Concept of Analog Butterworth Filter For Fractional Domain"
Signal Processing (Elsevier), 2014. [Read Online](#)
Anish Acharya, Saptarshi Das, Indranil Pan, Shantanu Das.
3. "Simulation studies on the design of optimum PID controllers to suppress chaotic oscillations in a family of Lorenz-like multi-wing attractors"
Mathematics and Computers in Simulation (Elsevier), 2014. [Read Online](#)
Saptarshi Das, Anish Acharya, Indranil Pan

Peer Reviewed Conference Articles.

1. "Faster Non-Convex Federated Learning via Global and Local Momentum".
The Conference on Uncertainty in Artificial Intelligence (UAI) 2022 [Read Online](#)
R. Das, A. Acharya, A. Hashemi, S. Sanghavi, I. Dhillon, U. Topku.

2. *"Robust Training in High Dimensions via Block Coordinate Geometric Median Descent"*.
International Conference on Artificial Intelligence and Statistics (AISTATS) 2022. [Read Online](#)
A. Acharya, A. Hashemi, P. Jain, S. Sanghavi, I. Dhillon, U. Topku.
Short version presented at Joint IFML/CCSI Symposium (Simons Institute - UC Berkley).
Short version presented at NSF-TRIPODS Workshop on Communication Efficient Distributed Optimization.
3. *"LDKP: A Dataset for Identifying Keyphrases from Long Scientific Documents"*
ACM International Conference on Information and Knowledge Management (CIKM) 2022
DL4SR'22: Workshop on Deep Learning for Search and Recommendation. [Preprint](#)
D Mahata, N Agarwal, D Gautam, A Kumar, S Parekh, Y K Singla, **A Acharya**, R R Shah.
4. *"Alexa Conversations: An Extensible Data-driven Approach for Building Task-oriented Dialogue Systems"*.
Conference of the North American Chapter of the Association for Computational Linguistics (NAACL) 2021. [Read Online](#)
A. Acharya, S. Adhikari, S. Agarwal, V. Auvray, N. Belgamwar, A. Biswas, S. Chandra, T. Chung, M. Zarandi, R. Gabriel, S. Gao, R. Goel, D. Hakkani-Tur, J. Jezabek, A. Jha, J. Kao, P. Krishnan, P. Ku, A. Goyal, C. Lin, Q. Liu, A. Mandal, A. Metallinou, V. Naik, Y. Pan, S. Paul, V. Perera, A. Sethi, M. Shen, N. Strom and E. Wang;
Media: CNN, Forbes, VentureBeat, Amazon Science, Alexa Skill.
5. *"GupShup: An Annotated Corpus for Abstractive Summarization of Open-Domain Code-Switched Conversations"*.
Conference on Empirical Methods in Natural Language Processing (EMNLP) 2021. [Read Online](#)
L. Mehnaz, D. Mahata, A. Kumar, U. S. Gunturi, R. Jain, G. Gupta, R. Gosangi, I. G. Lee, **A. Acharya**, R. Shah.
6. *"Online Embedding Compression for Text Classification using Low Rank Matrix Factorization"*.
AAAI Conference on Artificial Intelligence (AAAI) 2019. [Read Online](#)
Anish Acharya, Rahul Goel, Angeliki Metallinou, Inderjit Dhillon.
Media: Amazon Science, Packt
7. *"Stability Analysis Of Delayed System Using Bode's Integral"*.
International Conference on Computer Communication and the Internet (ICCCI) 2013 [IEEE Xplore](#)
A. Acharya, D. Mitra, K. Halder
8. *"Optimum PID Control of Multi-wing Attractors in A Family of Lorenz-like Chaotic Systems"*
International Conference on Computing, Communication and Networking Technologies (ICCCNT) 2012. [IEEE Xplore](#)
A. Acharya, S. Das, I. Pan
9. *"Optimized Quality Factor of Fractional Order Analog Filters with Band-Pass and Band-Stop Characteristics"*
International Conference on Computing, Communication and Networking Technologies (ICCCNT) 2012. [IEEE Xplore.](#)
A. Pakhira, S. Das, **A. Acharya**, I. Pan, S. Saha
10. *"Identification of nonlinear systems from the knowledge around different operating conditions: a feed-forward multilayer ANN based approach"*
International Conference on Parallel, Distributed and Grid Computing (PDGC) 2012 [IEEE Xplore](#)
S. Saha, S. Das, **A. Acharya**, A. Kumar, S. Mukherjee, I. Pan, A. Gupta
11. *"Least square and instrumental variable system identification of AC servo position control system with fractional Gaussian noise"*
International Conference on Energy, Automation and Signal (ICEAS) 2011 [IEEE Xplore](#)
S. Das, A. Kumar, I. Pan, **A. Acharya**, S. Das, A. Gupta.

Work in Progress.

1. *"Positive Unlabeled Contrastive Learning"*
Anish Acharya, Sujay Sanghavi, Li Jing, Bhargav Bhushanam, Dhruv Choudhary, Michael Rabbat, Inderjit Dhillon. [Preprint](#)
Short version presented at **International Conference on Machine Learning (ICML)** : PODS Workshop.
Short version presented at **Simons Institute - UC Berkley** : Data-Driven Decision Processes Workshop.
2. *"Neural Distributed Source Coding"*
J. Whang, **A. Acharya**, H. Kim, A. Dimakis. [Preprint](#)

Reviewing Services

I have served as reviewer of the following conference and journals:

- Reviewer - **IEEE Transactions on Knowledge and Data Engineering 2022 - Present**
 - Reviewer - **Pattern Recognition Letters (Elsevier) 2021 - Present**
 - Reviewer - **ICLR 2023**
 - Reviewer - **ICML 2021, 2022**
 - Reviewer - **AISTATS 2021, 2022, 2023**
 - Reviewer - **NeuRips 2021, 2022**
-