

# Aditya Kusupati

Bill & Melinda Gates Center for Computer Science & Engineering  
Paul G. Allen School of Computer Science & Engineering  
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🎓 Google Scholar

## RESEARCH INTERESTS

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I focus on designing fundamental *Machine Learning* algorithms with strong empirical performance & real-world deployability.

## EDUCATION

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**University of Washington, Seattle** 2019 - present  
*PhD student in Computer Science and Engineering*  
Advisors: Prof. Ali Farhadi & Prof. Sham Kakade

**Indian Institute of Technology Bombay** 2013 - 2017  
*B.Tech (Honours) in Computer Science and Engineering with Minor in Electrical Engineering*  
Advisor: Prof. Soumen Chakrabarti

## WORK EXPERIENCE

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**NVIDIA Toronto AI Lab** June - September, 2020  
*Research Scientist Intern*  
Advisors: Prof. Sanja Fidler & Prof. Antonio Torralba  
Explored missing modality (audio/visual/control) generation with cross-modal supervision for Atari video games using GANs.

**Microsoft Research India** 2017 - 2019  
*Research Fellow in Machine Learning and Optimization Group*  
Advisors: Dr. Manik Varma & Dr. Prateek Jain  
Worked on resource-efficient and large-scale machine learning resulting in top-tier publications & Microsoft product impact.

## PUBLICATIONS

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### Preprints

\* - equal contribution

2. **MERLOT RESERVE: Neural Script Knowledge through Vision and Language and Sound**  
Rowan Zellers, Jiasen Lu, Ximing Lu, Youngjae Yu, Yanpeng Zhao, Mohammadreza Salehi, **Aditya Kusupati**, Jack Hessel, Ali Farhadi and Yejin Choi.  
*Under Review, CVPR 2022.*
1. **FLUID: A Unified Evaluation Framework for Flexible Sequential Data**  
Matthew Wallingford, **Aditya Kusupati**, Keivan Alizadeh-Vahid, Aaron Walsman, Aniruddha Kembhavi and Ali Farhadi.  
*Under Review, CVPR 2022.*

### Conference Publications

7. **ProtoSound: Personalized, Scalable Sound Recognition for d/Deaf and Hard of Hearing Users through In-the-Wild Few-Shot Interactions.**  
Dhruv Jain, Khoa Nguyen, Steven Goodman, Rachel Grossman-Kahn, Hung Ngo, **Aditya Kusupati**, Ruofei Du, Alex Olwal, Leah Findlater and Jon Froehlich.  
*Conference on Human Factors in Computing Systems (CHI), 2022 (Talk).*
6. **LLC: Accurate, Multi-purpose Learnt Low-dimensional Binary Codes.**  
**Aditya Kusupati**, Matthew Wallingford, Vivek Ramanujan, Raghav Somani, Jae Sung Park, Krishna Pillutla, Prateek Jain, Sham Kakade and Ali Farhadi.  
*Neural Information Processing Systems (NeurIPS), 2021 (Virtual Talk).*
5. **RNNPool: Efficient Non-linear Pooling for RAM Constrained Inference.**  
Oindrila Saha, **Aditya Kusupati**, Harsha Vardhan Simhadri, Manik Varma and Prateek Jain.  
*Neural Information Processing Systems (NeurIPS), 2020 (Virtual Spotlight).*  
*WiCV workshop @ CVPR, 2020.*
4. **Soft Threshold Weight Reparameterization for Learnable Sparsity.**  
**Aditya Kusupati**, Vivek Ramanujan\*, Raghav Somani\*, Mitchell Wortsman\*, Prateek Jain, Sham Kakade and Ali Farhadi.  
*International Conference on Machine Learning (ICML), 2020 (Virtual Talk).*

### 3. **Extreme Regression for Dynamic Search Advertising.**

Yashoteja Prabhu, **Aditya Kusupati**, Nilesh Gupta and Manik Varma.

*International Conference on Web Search and Data Mining (WSDM), 2020 (Long Oral).*

*Workshop on eXtreme Classification: Theory and Applications @ ICML, 2020.*

### 2. **One Size Does Not Fit All: Multi-Scale, Cascaded RNNs for Radar Classification.**

Dhrubojyoti Roy\*, Sangeeta Srivatsava\*, **Aditya Kusupati**, Pranshu Jain, Manik Varma and Anish Arora.

*International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys), 2019.*

🏆 **Best Paper Runner-Up Award.**

### 1. **FastGRNN: A Fast, Accurate, Stable and Tiny Kilobyte Sized Gated Recurrent Neural Network.**

**Aditya Kusupati**, Manish Singh, Kush Bhatia, Ashish Kumar, Prateek Jain and Manik Varma.

*Neural Information Processing Systems (NeurIPS), 2018.*

## Journal Publications

### 1. **One Size Does Not Fit All: Multi-Scale, Cascaded RNNs for Radar Classification.**

Dhrubojyoti Roy\*, Sangeeta Srivatsava\*, **Aditya Kusupati**, Pranshu Jain, Manik Varma and Anish Arora.

*ACM Transactions on Sensor Networks (TOSN), 17(2), January 2021. (Best Paper Nomination).*

## Workshop Publications

### 1. **Disrupting Model Training with Adversarial Shortcuts.**

Ivan Evtimov, Ian Covert, **Aditya Kusupati** and Tadayoshi Kohno.

*Workshop on Adversarial Machine Learning @ ICML 2021.*

## Demos

### 1. **Lightweight, Deep RNNs for Radar Classification.**

Dhrubojyoti Roy\*, Sangeeta Srivatsava\*, Pranshu Jain, **Aditya Kusupati**, Manik Varma and Anish Arora.

*International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys), 2019.*

## Theses

### 1. **Efficient Spatial Representation for Entity-Typing.**

Anand Dhoot\*, **Aditya Kusupati\*** and Soumen Chakrabarti.

*Undergraduate Thesis, Computer Science and Engineering, IIT Bombay, 2016 - 17.*

## SOFTWARE

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### 1. **EdgeML: Machine Learning for Resource-constrained Edge Devices.**

Dennis et al., including **Aditya Kusupati**.

*Microsoft Research India, 2017.*

Stats: ★ >1,200, 📄 >320, 👁 >300,000, 📦 >4,500.

## SELECTED AWARDS AND HONORS

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- Academic Research **GCP Credit Award** worth \$40,000 2021
- **Expert Reviewer** for ICML '21 2021
- **Best/Top/Outstanding Reviewer** award for NeurIPS '19, '20; ICML '20, '21 & CVPR '21 2019 - 2021
- **Best Paper Runner-Up Award** at BuildSys '19 2019
- Young Researcher at Heidelberg Laureate Forum (**HLF '19**) with Romberg Grant & MSR Travel Grant 2019
- **Facebook AI Research International Scholarship** for DPhil at VGG, Oxford (2019 - 22, declined) 2019
- IIT Bombay CSE **Teaching Assistant of the month** (Feb '16 and Feb '17) award 2016 - 2017
- **All India Rank 44** in JEE Advanced (IIT-JEE) 2013 among 150,000 candidates 2013
- Gold Medal and rank **6 out of top 40** in India at OCSC for International Chemistry Olympiad '13 2013
- Awarded KVPY Fellowship from Government of India - All India Rank 22. 2011
- Awarded NTSE Scholarship from Government of India. 2008

## TALKS

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- **LLC: Accurate, Multi-purpose Learnt Low-dimensional Binary Codes**

– Neural Information Processing Systems (NeurIPS)

*December 2021*

- Microsoft Research India November 2021
- UC Berkeley Computer Vision Seminar November 2021
- University of Washington CSE Colloquium October 2021
- **Soft Threshold Weight Reparameterization for Learnable Sparsity**
  - International Conference on Machine Learning (ICML) July 2020
  - NVIDIA Research July 2020
  - Deep Learning: Classics and Trends June 2020
- **The Edge of Machine Learning**
  - University of Washington CSE Colloquium & Sensor Systems Seminar October 2019
  - VGG @ Oxford University, UK April 2019
  - Microsoft Research Redmond March 2019
  - Microsoft Research India August 2018
- **The Extremes of Machine Learning**
  - Microsoft Bing Bellevue March 2019

## PROFESSIONAL RESPONSIBILITIES

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- *Reviewing*: IEEE TPAMI, NeurIPS (2019 - present), ICML (2020 - present), ICLR (2021 - present), CVPR (2021 - present), ICCV (2021 - present).
- *Workshop Organization*
  - Rethinking ML Papers ICLR 2021
  - ML in India Social NeurIPS 2021
- *Mentorship*
  - Students
    - \* Oindrila Saha  
Research Fellow, MSR India (w\ Dr. Prateek Jain) → PhD Student @ UMass CS 2019 - 21
    - \* Sachin Goyal  
Research Fellow, MSR India (w\ Dr. Prateek Jain) → PhD Student @ CMU MLD 2019 - 21
    - \* Nilesh Gupta  
Research Fellow, MSR India (w\ Dr. Manik Varma) → PhD Student @ UT Austin CS 2019 - 20
    - \* Sahil Bhatia  
Research Fellow, MSR India (w\ Dr. Prateek Jain) → PhD Student @ UC Berkeley EECS 2018 - 20
    - \* Sheshansh Agrawal  
Bachelor's Thesis, IIT Bombay (w\ Prof. Soumen Chakrabarti) → RSDE @ MSR India 2018 - 19
    - \* Manish Singh  
Bachelor's Thesis, IIT Delhi (w\ Dr. Manik Varma) → PhD Student @ MIT EECS 2017 - 18
  - New In ML session @ NeurIPS '19 2019
  - MSR India Summer Workshop 2018: Machine Learning on Constrained Devices Summer 2018
- *Undergraduate Teaching Assistantship* - Computer Science and Engineering, IIT Bombay
  - Digital Logic Design - *Prof. Supratik Chakraborty* - **TA of the month, Feb '17** Spring 2017
  - Software Systems Lab - *Prof. Sharat Chandran* Autumn 2016
  - Digital Logic Design - *Prof. Supratik Chakraborty* - **TA of the month, Feb '16** Spring 2016
  - Computer Programming and Utilisation - *Prof. Varsha Apte* Autumn 2015
  - Computer Programming and Utilisation - *Prof. Kavi Arya* Spring 2015
- *Faculty Recruiting Liaison* - Paul G. Allen School of CSE, University of Washington 2020 - 2022
- *Student Area Chair (ML/AI): PhD Admissions* - Paul G. Allen School of CSE, University of Washington 2020 - 2022
- *Co-Founder & Co-Lead* - Allen School PhD Pre-Application Review Service (PARS) 2020
- *Co-Founder & Organizing Committee Member* - Allen School PhD Pre-Application Mentorship Service (PAMS) 2021
- *Department General Secretary* - Computer Science and Engineering, IIT Bombay 2016 - 2017