

# Sriram Balasubramanian

College Park, Maryland  
+1 (301) 728-6880  
sriramb@umd.edu  
sriram.live

## WORK EXPERIENCE

**Research Fellow** – Microsoft Research, India  
AUGUST 2020 – AUGUST 2021

- **Predicting e-mail arrivals and reads:** Built machine learning models to predict e-mail arrivals and reads from user type and history of arrivals/reads to improve cache hit rates.
- **Simulating network paths using ML:** Built machine learning models to simulate internet paths using static network traces

**Research Intern** – Comcast, Washington D. C.  
JUNE 2022 - AUGUST 2022

- Investigated the effectiveness of transfer learning in deep neural networks in the low resource regime (when the target domain has very limited data). Devised non-neural methods which could outperform both traditional collaborative filtering methods and neural networks in this regime.

## PUBLICATIONS

### Exploring Geometry of Blind Spots in Vision Models

– *NeurIPS 2023 (Spotlight)* [[Link to paper](#)]

- Studied the sensitivity and under-sensitivity of deep neural networks to perturbations in input data
- Introduced a Level Set Traversal algorithm that explores regions of high confidence in these networks and identifies inputs that share the same confidence level.

### Towards Better Input Masking for Convolutional Neural Networks

– *ICCV 2023* [[Link to paper](#)]

- Devised an input masking technique for CNNs called layer masking, which simulates running the CNN on only the unmasked input, minimally changing the intermediate activations
- Using this masking technique, we were able to significantly improve perturbation-based interpretability techniques like LIME which rely on masking out parts of the image to produce importance scores

### Simulating Network Paths with Recurrent Buffering Units

– *AAAI 2023* [[Link to paper](#)]

- Introduced a novel grey-box approach to network simulation that embeds semantics of physical network path in a new RNN-style model called Recurrent Buffering Unit (RBU)
- RBUs combine the interpretability of standard network simulator tools with the power of neural models, the efficiency of SGD-based techniques for learning, and yield promising results on synthetic and real-world network traces

### What's in a Name? Are BERT Named Entity Representations just as Good for any other Name?

– *RepL4NLP, ACL 2020* [[Link to paper](#)]

- Studied and designed training algorithms robust to synonym and named entity replacements on tasks including text classification, grammar correction, co-reference resolution and question answering
- Demonstrated non-robustness of BERT based models on various tasks and developed simple yet effective ensembling algorithm to make models robust to named entity replacements

### Can AI Generated Text be Reliably Detected?

– *Arxiv* [[Link to paper](#)]

- Showed that AI-text detectors (including watermarks) are often unreliable in practical scenarios, and they can be easily fooled by paraphrasing attacks
- Presented a theoretical impossibility result, suggesting that as language models improve in emulating human text, the performance of the best possible detectors decreases.

## EDUCATION

### MS/PhD in Computer Science

– UMD, College Park

AUG 2021 – PRESENT

- **GPA: 4.0/4.0**

### Bachelor's in Computer Science with Honors

– IIT Bombay, India

AUG 2016 – MAY 2020

- **GPA: 9.56/10.0**

## COURSEWORK

Machine Learning, Deep Learning, Linear Algebra, Statistics, Artificial Intelligence, Optimization, NLP, Computer vision, RecSys

## TECHNICAL SKILLS

**Languages:** Python • Matlab •  $\text{\LaTeX}$  • C/C++ • SQL • Java

**ML Frameworks:** PyTorch • Lightning • Tensorflow • Keras • MXNet

## AWARDS AND ACHIEVEMENTS

- Awarded Institute Academic Prize for exceptional academic performance in IIT Bombay [2017]
- Ranked **2nd** in the institute out of about 900 students in the first year at IIT Bombay [2017]
- Ranked **4th** in JEE Mains out of 1.2 million candidates all over India [2017]
- Awarded KVPY Fellowship by the Government of India [2015]
- Awarded NTSE scholarship by N.C.E.R.T [2014]

## TEACHING ROLES

**Teaching Assistant: Programming Handheld systems** •2022  
•UMD College Park

**Teaching Assistant: Probability and Statistics** •2021 •UMD College Park

**Teaching Assistant: Data Interpretation and Analysis** •2019 •IIT Bombay

**Teaching Assistant: Electricity and Magnetism** •2018 •IIT Bombay