Vidhisha **Balachandran**

Graduate Research Assistant · Carnegie Mellon University

5000 Forbes Avenue, Language Technologies Institute, Carnegie Mellon University

(+1) 412-961-2637 | vbalacha@cs.cmu.edu | vidhishanair.github.io | vidhishanair

Education

Carnegie Mellon University — *Pittsburgh, Pennsylvania*

PhD in Language Technologies — *August 2019 - Current*

- Advisor: Prof Yulia Tsvetkov
- Primary Interests: Transparency and Trust in NLP, Model Interpretability, Summarization, Question Answering.

Carnegie Mellon University — *Pittsburgh, Pennsylvania*

Masters in Language Technologies (GPA: 3.89/4.0) — *August 2017 - August 2019*

- Advisors: Prof Jaime Carbonell and Prof William Cohen
- Recipient of Research Fellowship for the entire course duration (Monthly Stipend + Full Tuition Fee Waiver)
- Courses: Algorithms for NLP 11-711, Introduction to Machine Learning 11-701, Neural Networks for NLP 11-747, Structured Prediction for Language and Other Discrete Data 11-763, Probability and Statistics 36-700, Advanced Multimodal Machine Learning 11-777, Human Languages for AI 11-724, Topics in Deep Learning 10-707

PES Institute of Technology — *Bangalore, India*

Bachelors in Computer Science and Engineering (GPA: 9.6/10) — *September 2011 - May 2015*

- Within the top 5% of the class
- Recipient of MHRD Scholarship 2011-2015 (Full Tuition Fee Waiver)
- Courses : Algorithms, Data Structures, Operating Systems, Data Mining, Natural Language Processing, Database Management Systems, Big Data

Experience

Allen Institute of Artificial Intelligence — *Remote (Pittsburgh, Pennsylvania)*

Research Intern (Hosts: Dr Matthew Peters, Dr Pradeep Dasigi) — *May 2021 - August 2021*

- Representation Learning for Long Documents
- Extending NLP architectures to process documents of ∼16K token length
- Pretraining techniques to encourage long range dependencies in representations

Google Brain — *Remote (Pittsburgh, Pennsylvania)*

Research Intern (Hosts: Niki Parmar, Dr Ashish Vaswani) — *May 2020 - August 2020*

- Developing Scalable Open-Domain QA models.
- Implementing intermediate passage reranking modules to make Open Domain QA models over ∼13M Web documents more efficient.
- Leveraging computational power of TPUs for faster Top-K MIPS Search

Google AI — *Pittsburgh, Pennsylvania*

Research Intern (Hosts: Dr William Cohen, Dr Michael Collins) — *June 2019 - August 2019*

- Developed QA models which learn to reason using Text + Wikidata Background Knowledge
- Developed Fact-Aware text representations for different downstream tasks
- Developed a general system to loosely align arbitrary text with related facts from Wikidata

Flipkart Pvt Limited — *Bangalore, India*

Software Development Engineer 2 — *July 2015 - July 2017*

- Developed statistical models to score E-Commerce products and listings for quality.
- Built a scalable platform that performs the scoring for ∼133M entities with low latency and self-learning feedback loops.
- Incorporated the scores into the product search ranking algorithm to ensure better quality products are ranked higher, significantly reducing the return percentage of products by 60 basis points and increasing customer satisfaction by 0.5 Net Promoter Score
- Mentored interns on the NLP projects of text analysis; inferring causes for product returns; and contextual keyword extraction using RAKE and Doc2Vec

Publications

2021	**Conference Paper**, *Balachandran V*, Pagnoni A, Lee JY, Rajagopal D, Carbonell J, Tsvetkov Y. : StructSum: Incorporating Latent and Explicit Sentence Dependencies for Single Document Summarization.	*EACL*
2021	**Conference Paper**, Joshi R, *Balachandran V*, Vashishth S, Black A, Tsvetkov Y. : DialoGraph: Incorporating Interpretable Strategy-Graph Networks into Negotiation Dialogues.	*ICLR*
2021	**Conference Paper**, Pagnoni A, *Balachandran V*, Tsvetkov Y. : Understanding Factuality in Abstractive Summarization with FRANK: A Benchmark for Factuality Metrics.	*NAACL*
2021	**Conference Paper**, Rajagopal D, *Balachandran V*, Tsvetkov Y, Hovy E. : SelfExplain: A Self-Explaining Architecture for Neural Text Classifiers.	*Arxiv*
2021	**Conference Paper**, *Balachandran V*, Vaswani A, Tsvetkov Y, Parmar N. : Simple and Efficient ways to improve REALM.	*Arxiv*
2020	**Conference Paper**, Dhingra B, Zaheer M, *Balachandran V* , Neubig G, Salakhutdinov R, Cohen W. : Differentiable Reasoning over a Virtual Knowledge Base.	*ICLR*
2015	**Conference Paper**, Sitaram D, Phalachandra HL, Harwalkar S, Murugesan S, Sudheendra P, Ananth R, *Balachandran V*, Kanji AH, Bhat SC, Kruti B. : Simple Cloud Federation.	*AMS IEEE*
2021	**Workshop Paper**, *Balachandran V*, Dhingra B, Sun H, Collins M, Cohen W. : Investigating the Effect of Background Knowledge on Natural Questions.	*DeeLIO, NAACL*
2020	**Workshop Paper**, Radhakrishnan K, Chakravarthy S, Kanakagiri T, *Balachandran V*. : "A Little Birdie Told Me ... " - Social Media Rumor Detection.	*WNUT, EMNLP*
2018	**Workshop Paper**, *Balachandran V*, Rajagopal D, Catherine R, Cohen W. : Learning to Define Terms in the Software Domain.	*WNUT, EMNLP*

Teaching

Fall 2019	**Artificial Intelligence Course (15-681)**, Conducted Recitation, Designed Exams & Assignments	*TA*
Spring 2020	**Neural Networks for NLP (11-747)**, Assignment Grading, Project Mentorship	*TA*

Mentorship

Fall 20-Present	**Rishabh Joshi**, Masters Student
Spring 21-Present	**Luyu Gao**, Masters Student
Spring 21-Present	**Maxine Lui**, Undergraduate Student
Fall 19-Spring 21	**Artidoro Pagnoni**, Masters Student
Spring 20-Fall 20	**Karthik Radhakrishnan, Sharanya Chakravarthy, Tushar Kanakagiri**, Masters Students

Invited Talks

Jun, 2021	**Simple and Efficient ways to improve REALM**, N2Formal Reading Group	*Google*
Apr, 2021	**On the Transparency and Reliability of Automatic Summarization**, CRIM Seminar Series	*CRIM Montreal*
Jul, 2020	**Incorporating External Background Knowledge into Natural Questions**, Google News, Brain	*Google*

Service

2018-Present	**Reviewer**, ACL , EMNLP, NAACL, NeurIPS, SRW
Fall 2020-Present	**Member**, CMU LTI DEI Committee
Spring 2021-Present	**Member**, CMU SCS PhD Dean's Advisory Committee
Fall 2020	**Organizing Committee Member**, CMU SCS Graduate Application Support Program

Honours & Awards

2014	**Scholarship Recipient**, Google Anita Borg Memorial Award Asia Pacific	*Tokyo, Japan*
2014	**Scholarship Recipient**, Grace Hopper Conference	*Bangalore, India*
2011-15	**First Class Honours with Distinction**, All eight semesters during Bachelors	*Bangalore, India*