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 (GPA: 4.04/4.0) *August 2019 - Current*

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

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 in Scientific Domain
- 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

2023	Feng S, Shi W, Bai Y, **Balachandran V**, He T, Tsvetkov Y. : CooK: Empowering General-Purpose Language Models with Modular and Collaborative Knowledge.	*ArXiv*
2023	Feng S, **Balachandran V**, Bai Y, Tsvetkov Y. : FactKB: Generalizable Factuality Evaluation using Language Models Enhanced with Factual Knowledge.	*ArXiv*
2023	Ahia O, Gonen H, **Balachandran V**, Tsvetkov Y, Smith N. : LEXplain: Improving Model Explanations via Lexicon Supervision.	**SEM*
2023	**Balachandran V***,Kumar S*, Njoo L, Anastasopoulos A, Tsvetkov Y. : Language Generation Models Can Cause Harm: So What Can We Do About It? An Actionable Survey. (* equal contribution)	*EACL*
2023	**Balachandran V***, Joshi R*, Saldanha E, Glenski M, Volkova S, Tsvetkov Y. : Unsupervised Keyphrase Extraction via Interpretable Neural Networks. (* equal contribution)	*EACL*
2022	**Balachandran V**, Hajishirzi H, Cohen W, Tsvetkov Y. : Correcting Diverse Factual Errors in Abstractive Summarization via Post-Editing and Language Model Infilling.	*EMNLP*
2021	**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	**Balachandran V**, Vaswani A, Tsvetkov Y, Parmar N. : Simple and Efficient ways to improve REALM.	*MRQA, EMNLP*
2021	**Balachandran V**, Dhingra B, Sun H, Collins M, Cohen W. : Investigating the Effect of Background Knowledge on Natural Questions.	*DeeLIO, NAACL*
2021	Joshi R, **Balachandran V**, Vashishth S, Black A, Tsvetkov Y. : DialoGraph: Incorporating Interpretable Strategy-Graph Networks into Negotiation Dialogues.	*ICLR*
2021	Pagnoni A, **Balachandran V**, Tsvetkov Y. : Understanding Factuality in Abstractive Summarization with FRANK: A Benchmark for Factuality Metrics.	*NAACL*
2021	Rajagopal D, **Balachandran V**, Tsvetkov Y, Hovy E. : SelfExplain: A Self-Explaining Architecture for Neural Text Classifiers.	*EMNLP*
2020	Dhingra B, Zaheer M, **Balachandran V** , Neubig G, Salakhutdinov R, Cohen W. : Differentiable Reasoning over a Virtual Knowledge Base.	*ICLR*
2020	Radhakrishnan K, Chakravarthy S, Kanakagiri T, **Balachandran V**. : “A Little Birdie Told Me ... ” - Social Media Rumor Detection.	*WNUT, EMNLP*
2018	**Balachandran V**, Rajagopal D, Catherine R, Cohen W. : Learning to Define Terms in the Software Domain.	*WNUT, EMNLP*
2015	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*

Teaching

Spring 2022	**The Web Conference 2022**, Mitigating Societal Impacts of Language Models	*Tutorial*
Spring 2022	**Introduction to NLP (Undergraduate) (15-681)**, Self Attention and Transformers	*Lecture*
Fall 2019	**Artificial Intelligence Course (Graduate) (15-681)**, Conducted Recitation, Designed Exams & Assignments	*TA*
Spring 2020	**Neural Networks for NLP (Graduate) (11-747)**, Assignment Grading, Project Mentorship	*TA*

Mentorship

Spring 23-Present	**Varich Boonsanong**, Undergraduate Student
Spring 22-Summer 23	**Orevaoghene Ahia**, PhD Student
Spring 22-Present	**Krithika Ramesh, Gauri Gupta**, Undergraduate Students
Fall 21-Fall 22	**Kayo Yin**, Masters Student
Fall 20-Spring 22	**Rishabh Joshi**, Masters Student
Spring 21-Spring 22	**Luyu Gao**, Masters Student
Spring 21-Fall 21	**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

June, 2023	**Actionable Directions for Reporting and Mitigating Language Model Harms**, Center for Security and Emerging Technology	*Georgetown University*
May, 2023	**Generalizable Factual Error Correction of Model Generated Summaries**, SemaFor Working Group	*DARPA*
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

2022-Present	**Workshop Organizer**, COLING 2022 Workshop on Performance and Interpretability Evaluations of Multimodal, Multipurpose, Massive-Scale Models
2018-Present	**Reviewer**, ACL , EMNLP, NAACL, NeurIPS, SRW
Fall 2020 - Present	**Committee Head**, CMU LTI Mentoring Program
Fall 2020, 2021	**Organizing Committee Member**, CMU SCS Graduate Application Support Program
Fall 2020-Fall 2021	**Member**, CMU LTI DEI Committee
Spring,Fall 2021	**Member**, CMU SCS PhD Dean's Advisory Committee

Honours & Awards

2022	**Scholarship Recipient**, Cadence Diversity in Technology Scholarship	*San Jose, USA*
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*