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 | in vidhishanair

Education _____

Carnegie Mellon University   *Pittsburgh, Pennsylvania*

PHD IN LANGUAGE TECHNOLOGIES   *August 2019 - Current*

- Advisor: Dr 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 _____

Google Brain   *Pittsburgh, Pennsylvania*

RESEARCH INTERN (HOSTS: DR ASHISH VASWANI, NIKI PARMAR)   *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

Language Technologies Institute   *Pittsburgh, Pennsylvania*

GRADUATE RESEARCH ASSISTANT   *August 2017 - Current*

- Developed transfer learning models for entity recognition (NER) and entity linking for closed domain data
- Achieved +53 F1 points gain in Insurance Domain NER using transfer learning and distant supervision
- Developed machine learning models for fraud detection in low resource domain

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

2020	**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. *Under Review*.
2020	**Conference Paper**, Dhingra B, Zaheer M, *Balachandran V* , Neubig G, Salakhutdinov R, Cohen W. : Differentiable Reasoning over a Virtual Knowledge Base. *ICLR*. — *Virtual*
2018	**Workshop Paper**, *Balachandran V*, Rajagopal D, Catherine R, Cohen W. : Learning to Define Terms in the Software Domain. *4th Workshop on Noisy User-Generated Data, EMNLP.* — *Brussels, Belgium*
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. *Modelling Symposium (AMS) IEEE.* — *Taipei, Taiwan*

Teaching

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

Course Projects

Self Supervision for Image Captioning using Image Jigsaws   *Advisor : Dr Louis-Philippe Morency*

TECHNOLOGIES USED: PYTHON, PYTORCH   *Sept 2018 - Dec 2018*

- Exploring usage of self-supervision from solving a Jigsaw puzzle for Multi-modal tasks like Image Captioning
- Exploring Joint Learning vs Transfer Learning settings to leverage information learned from solving Jigsaw puzzles
- Initial experiments have shown a 0.5 BLEU score increase over State of Art Results

Table to Text Generation   *Advisor : Dr Graham Neubig*

TECHNOLOGIES USED: PYTHON, PYTORCH   *Jan 2018 - May 2018*

- Built a Seq2Seq model for generating biographies of people from Wikipedia Biography Tables
- Used alignments between table and text phrases to improve biographies
- Results were on par with previous State of Art models

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*