

Kolluru Sai Keshav

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RESEARCH INTERESTS

Neural OpenIE, Multi-Hop QA, BERT Finetuning, Probing NLP Architectures

EDUCATION

2017 - PRESENT	PhD in Computer Science and Engineering . Indian Institute of Technology, Delhi . SUPERVISORS: Dr. Mausam (IIT Delhi), Dr. Soumen Chakrabarti (IIT Bombay) CGPA: 9.25/10
2013 - 2017	Undergraduate Degree in Computer Science and Engineering . Indian Institute of Technology, Bhubaneswar . CGPA: 9.78/10
2011 - 2013	Intermediate Education at MAHATHI JUNIOR COLLEGE, Visakhapatnam. BOARD OF INTERMEDIATE EDUCATION, ANDHRA PRADESH, India. FINAL GRADE: 96.5%

PUBLICATIONS

- Keshav Kolluru*, Samarth Aggarwal*, Vipul Rathore, Mausam, Soumen Chakrabarti, *IMOJIE: Iterative Memory-Based Joint Open Information Extraction*, Submitted to ACL 2020
- Pratyush Maini*, Keshav Kolluru*, Mausam, *Analyzing the Power of Pooling in Recurrent Architectures*, Submitted to ACL 2020
- S.Sukumaran, M. Satpathy, Keshav Kolluru, R.Mall, *Inferring State Models using Feedback Directed Random Testing*, Asia-Pacific Software Engineering Conference, 2015.
- Keshav Kolluru, Prasenjit Mukherjee, *Query Clustering using Segment Specific Context Embedding*, arXiv:1608.01247.

SCHOLASTIC ACHIEVEMENTS

Institute Rank (IR) and Departmental Rank (DR) 2 in the batch 2013-2017 of IIT Bhubaneswar.
Won the **best BTech thesis award** in Computer Science of IIT Bhubaneswar
Secured SGPA of 9.96 in 2nd Semester and 10 in 6th,7th, 8th Semester (BTech)
Qualified among the top 0.5% of the students (about 15,00,000) appeared for JEE(2013)

WORK EXPERIENCE

IBM Research SUMMER 2017
Research Intern

Worked on integrating Concept Flows in Neural Dialog systems - where a dialog can be seen as a linear flow of latent-concepts. Using Graph Clustering to identify the concepts, we trained an end-to-end LSTM network to identify the concepts and predict the words in the concept given the concept-chain so far.

Microsoft (Bing) SUMMER 2016
Data Science Intern

Worked on automatic discovery of important search-topics based on the queries received by Bing. Developed a scalable embedding method for search strings by extending Word2Vec for the retrieved snippets and devised a hierarchical clustering technique for search-query clustering.

PROJECTS

PHD

Neural Open Information Extraction

2019

Designed end-to-end BERT-based systems for extracting a set of facts from a sentence using bootstrapping from previous systems. Resulted in performance improvements of 18% compared to prior neural systems.

Analyzing the power of pooling in recurrent architectures

2019

Analyzed the reasons behind the performance improvement resulting from pooling hidden-states in LSTMs. Designed novel experiments which attribute the performance gap to solving vanishing gradients and remembering middle words.

Evidence aggregation for Open-Domain Question Answering

2018

Devised a new pooling technique, AbsMaxPool, that can efficiently integrate knowledge retrieved from a large corpora for answering complex science questions

Question-Answering on Semi-Structured Context

2017

Developed Multi-Instance Learning techniques for predicting SQL-type logical forms for Question-Answering on WikiTableQuestions dataset

BTECH

Predicting the Effect of Forces in Images

Prof. Chitta Baral, Arizona State University

Developed a novel model to predict the effect of forces on objects in 2D images by integrating classical physics equations into CNNs

A Scalable Architecture for Visual Question Answering (VQA)

Developed a VQA architecture consisting of a high-level interplay between the NLP and CV modules which won the *IBM-ICARE Watson Cognitive Challenge*

Verification of Synchronous Programs

Dr. Partha Roop, University of Auckland

Developed a black-box method for verifying functional properties and timing constraints of synchronous programs

Inferring State Models using FDRT

Dr. Manoranjan Satpathy, IIT Bhubaneswar

Developed a tool for extracting an abstracted state model from any Java program using Q-Learning

TEACHING AND PROFESSIONAL SERVICES

Teaching Assistant for Artificial Intelligence, Natural Language Processing, IIT Delhi

Teaching Assistant for Programming and Data Structures, Operating Systems, IIT Bhubaneswar

Co-reviewed submissions to NeurIPS 2019 and EMNLP-IJCNLP 2019.

Responsible for <http://www.cse.iitd.ac.in/nlpdemo>, a collection of NLP demos from DAIR lab

Nominated and sponsored to attend Amazon Research Days 2018, Microsoft Academic Research Summit 2018.

TECHNICAL SKILLS

Courses (IIT Delhi) Deep Learning, Natural Language Processing, Machine Learning, Computer Vision, Deep Reinforcement Learning (IIT Bbs) Pattern Recognition, Soft Computing

Libraries (Advanced) PyTorch, Tensorflow (Basic) Dynet, Theano