DESH RAJ

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EDUCATION

Johns Hopkins University *ongoing*
Ph.D. in Computer Science
Advisors: Daniel Povey, Sanjeev Khudanpur
Research Interests: Speech recognition, language modeling, deep learning

Indian Institute of Technology Guwahati *June 2017*
B.Tech. in Computer Science & Engineering
GPA: 9.35/10
Thesis: Relation extraction in clinical text using deep learning

PROJECTS

Test-time i-vector adaptation for ASR Ongoing

· Working on a Kaldi-based two-pass pipeline for test-time speaker adaptation of i-vectors for improved ASR.

Sub-word based methods for OCR Fall 2018

· Experimented with subword modeling methods such as BPE, unigram probability, and LZW compression, for OCR applications.
· Implemented a subword-based hybrid HMM-DNN system for Bentham dataset, improving SOTA by 7% relative WER.

Irony detection in English tweets January 2018

· Used circular cross-correlation between tweet text and hashtags to model irony and transfer learning from pretrained DeepMoji model for in-text irony detection
· Achieved 70% accuracy on validation set in SemEval 2018 Task 3

Relation classification in biomedical text Bachelor Thesis
Guide: Prof. Ashish Anand, Dept. of CSE

· Implemented a novel CRNN model to learn long and short term dependencies and evaluated attention-based pooling
· Achieved state-of-the-art performance on two benchmark datasets (i2b2 and DDI) without any manual feature engineering
· Recently devised a Graph CNN model to leverage information from dependency parse of the sentence; this outperforms earlier model.

Spatial Transformer Networks Fall 2016
Guide: Prof. Arijit Sur, Dept. of CSE

· Used STNs for activity prediction from egocentric images
· Achieved performance comparable to state-of-the-art on GTEA and Intel Egocentric Vision datasets with extremely fast convergence.

EXPERIENCE

Samsung Research Institute Bangalore June 2017 - June 2018
Research Engineer *Bangalore, India*

- Conceptualized and implemented several key features like undo, selective delete, etc., as part of Context Engine team in Conversational Intelligence
- Devised a bit truncation method to reduce word embeddings size for on-device AI; achieved 75% compression with 95% correlation in word similarity task

Microsoft India May 2016 - July 2016
Software Development Engineering Intern *Hyderabad, India*

- Developed a cross-platform mobile application in Xamarin Forms for OEM digital contracting system
- Evaluated various notification services and implemented GCM for push notifications
- Conceptualized statistics APIs to improve business efficiency

PUBLICATIONS

D.Raj, S.K.Sahu, A.Anand, *Learning local and global contexts using a convolutional recurrent network model for relation classification in biomedical text.* SIGNLL Conference on Computational Natural Language Learning (CoNLL) 2017. PP 311–321

D.Raj, A.Gupta, B.Garg, K.Tanna, F.C.H.Rhee, *Analysis of data generated from multidimensional type-1 and type-2 fuzzy membership functions.* IEEE Transactions on Fuzzy Systems.

S.Majheed, A.Gupta, **D.Raj**, F.C.H.Rhee, *Uncertain Fuzzy Self-organization based Clustering: Interval Type-2 Approach to Adaptive Resonance Theory.* Information Sciences 424 (2018). PP 69–90

ACHIEVEMENTS

Recepient of **INAE Travel Grant Scheme** by Govt. of India for oral presentation at WCCI 2016

Recepient of **Kalyani Research Scholarship** from Alumni Affairs (IIT Guwahati) for publishing at an international conference during B.Tech.

Offered **INSPIRE scholarship** by Dept. of Science and Technology, Govt. of India, for being among the top 1% in AISSCE-2013

TECHNICAL SKILLS

Programming Languages	Python, C, C++, Java, Bash
Libraries & Frameworks	Kaldi, Tensorflow, Keras, PyTorch
Software	MATLAB, Visual Studio, Eclipse, Android Studio, LaTeX