Souvik Kundu

Academic Resume

Research Interest

Natural Language Processing, Commonsense Reasoning, Interpretable Models, Deep Learning, Application of Deep Learning in different NLP tasks

Education

2014–2020 **PhD in Computer Science**, *National University of Singapore*, Singapore, *CGPA - 4.75/5.0*.
Thesis Title - Deep Neural Network Models for Question Answering

2010–2014 **Bachelor of Engineering in Electronics and Telecommunication**, *Jadavpur University*, Kolkata, India, *CGPA - 9.06/10.0*.

Experience

2019– **Data & Applied Scientist**, *Microsoft*, USA.

2018 **Research Intern**, *Allen Institute for Artificial Intelligence (AI2)*, Seattle, USA.

2015 **Student Intern**, *University of Washington*, Seattle, USA.
Jelinek Summer workshop of Speech and Language Technology (JSALT)

Research Projects

2019 **Conversational Question Answering**, *Worked on this project during my PhD which was supported by the prestigious AI Research Singapore Grant.*.

2018 **Multi-hop Question Answering**, Worked on this project during my internship at Allen Institute for Artificial Intelligence. In multi-hop question answering, a system is required to reason over a chain of multiple facts distributed across multiple passages. The proposed approach operates by generating potential paths, extracting implicit relations along these paths, and composing them to encode each path. As an outcome, a paper has been accepted in ACL 2019.

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2018 **Nil-Aware Machine Reading Comprehension**, Proposed an unified framework that can be integrated to many machine comprehension systems. As an outcome, a paper has been published in EMNLP 2018.

2017 **Reading Comprehension-based Question Answering**, Proposed a neural model to tackle the complex co-reference resolution and for implicit understanding of answer type. As an outcome, a paper has been published in AAAI 2018.

2016 **Noise Robust DNN-based ASR**, To improve the adaptability and interpretability of DNN-based acoustic models, a Vector Tailor Series (VTS) compensated Gaussian Mixture Model is combined with a DNN. This also improves the noise robustness. Published a paper in INTERSPEECH 2016.

2015 **Joint Acoustic Factor Learning for Robust ASR**, Completed this project in the Jelinek Summer workshop of Speech and Language Technology (JSALT 2015). Explored the use of discriminative auxiliary input features obtained using joint acoustic factor learning for Deep Neural Network adaptation. Two types of joint acoustic factor learning were used which capture speaker and auxiliary information such as noise, phone and articulatory information of speech..

Awards and Achievements

2018 **Research Achievement Award**, *National University of Singapore*.

2014 - 2018 **Research Fellowship**, *National University of Singapore*.

Publications

[1] Souvik Kundu, Qian Lin, and Hwee Tou Ng. Learning to identify follow-up questions in conversational question answering, ACL 2020.

[2] Souvik Kundu, Tushar Khot, Ashish Sabharwal, and Peter Clark. Exploiting explicit paths for multi-hop reading comprehension, ACL 2019.

[3] Souvik Kundu and Hwee Tou Ng. A nil-aware answer extraction framework for question answering, EMNLP 2018.

[4] Souvik Kundu and Hwee Tou Ng. A question-focused multi-factor attention network for question answering, AAAI 2018.

[5] Khe Chai Sim, Yanmin Qian, Gautam Mantena, Lahiru Samarakoon, Souvik Kundu, and Tian Tan. Adaptation of deep neural network acoustic models for robust automatic speech recognition, New Era for Robust Speech Recognition, Exploiting Deep Learning 2017: 219-243.

[6] Souvik Kundu, Khe Chai Sim, and Mark Gales. Incorporating a generative front-end layer to deep neural network for noise robust automatic speech recognition, INTERSPEECH 2016.

[7] Souvik Kundu, Gautam Mantena, Yanmin Qian, Tian Tan, Marc Delcroix, and Khe Chai Sim. Joint acoustic factor learning for robust deep neural network based automatic speech recognition, ICASSP 2016.

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[8] Tian Tan, Yanmin Qian, Dong Yu, Souvik Kundu, Liang Lu, Khe Chai SIM, Xiong Xiao, and Yu Zhang. Speaker-aware training of lstm-rnns for acoustic modelling, ICASSP 2016.

Professional Service

2019 **Association of Computational Linguistics (ACL)**, *Program Committee Member.*
2018 **Association of Computational Linguistics (ACL)**, *Program Committee Member.*
2018 **Journal of Natural Language Engineering (JNLE)**, *Reviewer.*
2018 **Computational Linguistics (CL)**, *Reviewer.*

Teaching Assistant

Spring 2015 **CS4218**, *Software Testing.*
Fall 2015 **CS1020E**, *Data Structures and Algorithms I.*
Spring 2016 **CS4218**, *Software Testing.*
Fall 2016 **CS1101S**, *Programming Methodology.*
Spring 2017 **CS1020 & CS1020E**, *Data Structures and Algorithms I.*

Technical Skills

DL Tools	Theano, PyTorch, AllenNLP	Language	C, C++, JAVA
Scripting	Shell scripting, Python, Matlab	ASR Tool	Kaldi, HTK, CNTK

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