Tanmay Parekh | Curriculum Vitae

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Interests

Multilingual and Code-switching Technologies, Controlled and Interpretable Generation

Education

University of California, Los Angeles *Sep '21 - Ongoing*
Doctor of Philosophy (Ph.D.) in Computer Science
GPA: 4.0/4.0

Carnegie Mellon University *Aug '19 - Jul '21*
Masters of Science (MS) in Language Technologies
GPA: 4.02/4.0

Indian Institute of Technology Bombay *Jul '14 - May '18*
Bachelor of Technology (B.Tech.) with Honors in Computer Science and Engineering
Minor in Applied Statistics and Informatics
GPA: 9.37/10.0

Publications

GENEVA: Pushing the Limit of Generalizability for Event Argument Extraction with 100+ Event Types:
Tanmay Parekh, I-Hung Hsu, Kuan-Hao Huang, Kai-Wei Chang, Nanyun Peng
To be submitted at *EMNLP 2022* [paper]

Politeness Transfer: Tag and Generate Approach:
Aman Madaan*, Amrith Setlur*, Tanmay Parekh*, Barnabas Poczos, Graham Neubig, Yiming Yang, Ruslan Salakhutdinov, Alan W Black, Shrimai Prabhumoye (* joint authors)
In Proceedings of *ACL 2020* [paper]

Understanding Linguistic Accommodation in Code-Switched Human-Machine Dialogues:
Tanmay Parekh, Emily Ahn, Yulia Tsvetkov, Alan W Black
In Proceedings of *CoNLL 2020* [paper]

Towards using Heterogeneous Relation Graphs for end-to-end TTS:
Amrith Setlur*, Aman Madaan*, Tanmay Parekh*, Yiming Yang, Alan W Black (* joint authors)
In Proceedings of *ASRU 2021* [paper]

Code-switched Language Models Using Dual RNNs and Same-Source Pretraining:
Saurabh Garg*, Tanmay Parekh* and Preethi Jyothi (* joint authors)
In Proceedings of *EMNLP 2018* [paper]

Dual Language Models for Code Mixed Speech Recognition:
Saurabh Garg, Tanmay Parekh and Preethi Jyothi
In Proceedings of *Interspeech, 2018* (Received ISCA Student Grant) [paper]

Automatic and Accurate Attribute Extraction for E-Commerce:
Tanmay Parekh, Sachin Farfade and Nikhil Rasiwasia
In Proceedings of *AMLC, 2019* (Internal Amazon Machine Learning Conference)

Research Projects

Benchmarking Generalizability for Event Argument Extraction
Guide: Prof. Kai-Wei Chang & Prof. Nanyun Peng

- Created a new dataset covering a diverse range of 100+ event types for Event Argument Extraction (EAE). Setup four different benchmarking setups to test the generalizability of EAE models.
- Developed a new generative model SCAD which automates and scales up a previous model DEGREE. This model outperforms others baselines and sets a new benchmark in our test suites.
- We plan to submit our work at EMNLP 2022.

Towards building Code-Switching Chatbots

Guide: Prof. Alan W Black, Prof. Alexander Rudnicky & Prof. Yulia Tsvetkov

- Proposed a generalized goal-oriented multilingual dialogue framework that elicits code-switching and showed its effectiveness by collecting a code-switched dialogue dataset for Hindi-English
- Experimented with various agent strategies to study user behavior. Discovered various insights about users' code-switching patterns, personal bias and linguistic accommodation

Tag and Generate Approach for Politeness Transfer

Guide: Prof. Alan W Black & Prof. Graham Neubig

- Introduced a new task of politeness transfer providing a large dataset of nearly 1.4 million instances
- Designed a tag and generate pipeline that identifies stylistic attributes and subsequently generates a sentence in the target style while preserving most of the source content, outperforming many other state-of-the-art methods.

Tartan: Alexa Socialbot Challenge 2020

Guide: Prof. Alexander Rudnicky

- Developed minibots - self-contained domain-specific chatbots - which are integrated together using a dialog manager. Responsible for maintaining and updating the minibots
- Prototyped a curious bot, which can ask relevant and interesting questions in an unknown conversational context
- Reached the Semifinals of the Alexa Socialbot Challenge

Accent control in Speech Synthesis

Guide: Prof. Alan W Black

- Enriched the input representations for speech synthesis using heterogenous relation graphs (HRGs)
- Utilized auxiliary losses for allophone sequence prediction and accent classification to aid better accent transfer

Language Modelling for Code-Switched Text (Undergraduate Thesis)

Guide: Prof. Preethi Jyothi

- Built a robust framework comprising of Dual Language Models (DLM), wherein we train two complementary n-gram language models and combine them in a probabilistic manner.
- Designed a new DNN architecture comprising of a dual LSTM unit which combines two monolingual specialized LSTM units and improves upon the standard RNNLM architecture

Industry Experience

Applied Scientist *Jul '18 - Jun '19*

Machine Learning Team, Amazon

- Worked on the identification and extraction of product attributes from the titles of product pages without the use of any human supervised data. Used distant supervision to procure data instead
- Modelled the problem as an NER task and developed state-of-the-art baselines. Introduced new regularization techniques and semi-supervised self-training based techniques to learn in the partially labeled data setting

Internships

Summer Analyst: Goldman Sachs *Summer '17*

Summer Intern: Philips Research *Summer '16*

Summer Analyst: Sportz Interactive *Summer '15*

Scholastic Achievements and Grants

- Received sponsorship of $50,000 covering tuition and stipend from DSTA
- Received sponsorship of $100,000 as part of the **Alexa SocialBot Challenge 2020**
- Recipient of the **ISCA Student Grant** for attending Interspeech '18 selectively awarded internationally
- Achieved **294th rank** among 1.5 million students in the examination of JEE Mains and **581st rank** among 0.15 million students in the examination of JEE Advanced

Selected Courses

- Machine Learning
- Convex Optimization
- Theoretical Statistics
- Reinforcement Learning
- Natural Language Generation
- Neural Networks for NLP
- Sequence-to-Sequence Models
- Multimodal Machine Learning
- Human Languages for AI
- Automatic Speech Recognition