Tanmay Parekh | Curriculum Vitae

+1 (412)7086498 • tparekh@cs.ucla.edu • tanmayparekh.github.io

Interests

Event Extraction, Multilingual and Code-switching Technologies, Control and Generalization in 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

Selected Publications

Contextual Label Projection for Cross-Lingual Structure Extraction:
Tanmay Parekh, I-Hung Hsu, Kuan-Hao Huang, Nanyun Peng, Kai-Wei Chang
To be submitted at *NAACL 2024* [paper]

Event Detection from Social Media for Epidemic Preparedness:
Tanmay Parekh, ..., Kuan-Hao Huang, Nanyun Peng, Wei Wang, Kai-Wei Chang
Submitted at *EMNLP 2023*

GENEVA: Benchmarking Generalizability for Event Argument Extraction with Hundreds of Event Types and Argument Roles:
Tanmay Parekh, I-Hung Hsu, Kuan-Hao Huang, Kai-Wei Chang, Nanyun Peng
In Proceedings of *ACL 2023* [paper]

Politeness Transfer: Tag and Generate Approach:
Aman Madaan*, Amrith Setlur*, Tanmay Parekh*, ..., 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]

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]

Selected Research Projects

Contextual Machine Translation for Label Projection for Cross-Lingual Structure Extraction
Guide: Prof. Kai-Wei Chang & Prof. Nanyun Peng

- Utilized instruction-tuned language models to perform contextual machine translation to solve label projection for structure extraction tasks. We used LLama-2 as the instruction-tuned model.
- Improved translate-train for Event Argument Extraction (EAE) by 2-3 F1 points for Arabic and Chinese.

Event Extraction from Social Media for Epidemic Preparedness
Guide: Prof. Kai-Wei Chang & Prof. Wei Wang & Prof. Nanyun Peng

- Created the first wide-coverage ontology and Event Detection dataset SPEED for extracting events for epidemic preparedness from social media. We focused on the COVID-19 pandemic and Twitter as the social media platform.
- Benchmarked recent models and showed how in-domain data from our dataset provides strong model improvements.
- Demonstrated the generalization of our framework by predicting epidemic events and providing early epidemic warnings for an unforeseen epidemic of Monkeypox.

Benchmarking Generalizability for Event Argument Extraction

Guide: Prof. Kai-Wei Chang & Prof. Nanyun Peng

- Created a diverse and comprehensive Event Argument Extraction (EAE) ontology with 100+ event types and argument roles using expert human annotations from a semantic role labeling dataset FrameNet.
- Proposed a dataset GENEVA along with four different benchmarking setups to test the generalizability of models. Benchmarked several EAE models from various families on our dataset.

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.

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

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 Intern *Jun '22 - Sep '22*

Alexa Conversations Team, Amazon

- Utilize Wikipedia to generate minimal pairs for relative characterization of negation in language models.
- Developed an alignment-based fine-tuning algorithm for improving the multilingual alignment of negation in multilingual language models. This algorithm provided zero-shot cross-lingual improvements on downstream tasks.

Applied Scientist *Jul '18 - Jun '19*

India 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

Other Internships: Goldman Sachs, Philips Research, Edelweiss, Sportz Interactive

Scholastic Achievements and Grants

- Received the **UCLA Computer Science Fellowship** providing sponsorship for 2021 – 2022
- Received **sponsorship and grants** ranging upto $150,000 from DSTA and Alexa Socialbot Challenge
- 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

- Neural Networks for NLP
- Natural Language Generation
- Large Scale Machine Learning
- Theoretical Statistics
- Convex Optimization
- Reinforcement Learning
- Multimodal Machine Learning
- Automatic Speech Recognition