

Nikita Moghe

Natural Language Processing, Dialogue Systems

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Education

University of Edinburgh

Ph.D. in Natural Language Processing

Advisors: Alexandra Birch and Mark Steedman

September 2019 -

Indian Institute of Technology Madras

M.S. (by Research), Computer Science and Engineering

Advisors: Balaraman Ravindran and Mitesh M. Khapra

Thesis: Incorporating External Knowledge in Domain Specific Conversation Systems

2016 - 2019

C.G.P.A: 8.8/10

University of Mumbai

B.E., Computer Engineering

Sardar Patel Institute of Technology

2012 - 2016

C.G.P.A: 9.53/10

Publications

- **The University of Edinburgh-Uppsala University's Submission to the WMT 2020 Chat Translation Task.**
Nikita Moghe, Christian Hardmeier, Rachel Bawden
In Proceedings of the Fifth Conference on Machine Translation (WMT 2020), EMNLP 2020.
- **On Incorporating Structural Information to improve Dialogue Response Generation.**
Nikita Moghe, Priyesh Vijayan, Balaraman Ravindran, Mitesh M. Khapra
In Proceedings of the 2nd Workshop on Natural Language Processing for Conversational AI, ACL 2020.
- **Towards Exploiting Background Knowledge for Building Conversation Systems.**
Nikita Moghe, Siddhartha Arora, Suman Banerjee, Mitesh M. Khapra
In proceedings of 2018 Conference on Empirical Methods in Natural Language Processing, EMNLP 2018.
- **A Dataset for Building Code-Mixed Goal Oriented Conversation Systems.**
Suman Banerjee, Nikita Moghe, Siddhartha Arora, Mitesh M. Khapra
In proceedings of COLING 2018, International Committee on Computational Linguistics.

Professional Experience

Robert Bosch Centre for Data Science and AI, IIT Madras

Project Associate (Deep Learning for NLP)

Presented ongoing/published work in Web Science Symposium, three RBC-DSAI poster sessions.

May 2018 - June 2019

Microsoft Research India

Participant, Workshop on Artificial Social Intelligence

June 2017

Key Projects

Pre-training for Multilingual Dialogue Systems

Collaborators: Mark Steedman, Alexandra Birch

Nov 2020 - Present

- Developing adapter-based models to utilize the existing power of pre-trained representations like XLM or mBERT while improving representations for downstream dialogue tasks.
- Designing new dialogue-specific objective functions and improving the choice of task-specific fine-tuning data like source-language Open Subtitles.

Intermediate Knowledge Representation (SQL) in Conversation Systems

Collaborators: Liane Guillou, Alexandra Birch, Mark Steedman

May 2020 - Oct 2020

- Existing text-to-SQL neural architectures fail to identify implicit and explicit contextual references in the conversation history leading to erroneous SQL generation.
- We experiment with improving co-reference resolution within the input statements explicitly by building task-specific co-reference resolution systems and we are currently looking at a multi-task learning setup.

Incorporating External Knowledge in Domain Specific Conversation Systems

2017-2019

Collaborators: Siddhartha Arora, Suman Banerjee, Priyesh Vijayan, Balaraman Ravindran, Mitesh M. Khapra

- Introduced a paradigm shift from treating conversation as a sequence modelling problem to using relevant external information for meaningful and coherent responses.
- Developed a framework to combine semantic information from word embeddings, sequential word order information from LSTMs, and structural information using Graph Convolutional Networks.
- Empirically showed that explicit adding of structural information improves dialogue response generation.

Secondary Projects

Lemmatization for Corpus of Historical Mapudungun

Fall 2019

Team: Rimvydas Rubavicius, Dan Wells, Irene Winther, Benjamin Molineaux, Sharon Goldwater

- Developed a framework for the lemmatization of a morphologically-rich language in a low-resource setting.
- Experimented with hard monotonic attention model for lemmatization and provided an early design for the morpho-syntactic parser.

HollyChat! Domain Specific Conversation Systems

June 2017

Team: Gurneet Singh, Sanchit Agrawal, Preksha Nema, Mitesh M. Khapra

- Developed a minimalist conversation strategy that could keep the user engaged for seven turns using insights from crowd sourced conversations.
- Improved domain specific conversations using information from knowledge graphs and case-based response generation.

Positions of Responsibility

- Organizer: Workshop on Graphs and more Complex structures for Learning and Reasoning (GCLR) at AAAI-21.
- Reviewer: AAAI (2020,2021), ACL (2020), COLING (2020), NAACL (2021).
- Teaching Assistant: Accelerated Natural Language Processing (Fall 2020), Doing Research in Natural Language Processing (Fall 2020), University of Edinburgh; Introduction to Machine Learning (Fall 2017), IIT Madras.
- Public Engagement: I'm a Scientist Stay at Home - Mentor for Coding Zone, Summer 2020; International Women's Day Celebration 2020 - Edinburgh Hoppers.

Achievements

Poster Presentations

- Extended abstract on the Dialogue-GCN work accepted at EurNLP '19.
- First Position at 4th RBC-DSAI Workshop May 2019. Awarded a travel grant of \$250.
- First Position at Grace Hopper Celebration India 2018 (GHCI '18).

Travel Grants

- EMNLP 2018 Student Travel Scholarship.
- Microsoft Research India Student Travel Grant 2018.
- Grace Hopper Celebration India 2018 (GHCI '18) Student Scholarship.

Awards

- Computer Society of India Highest Committed Student Award 2015.
- Infibeam's Most Innovative Project Idea 2015.

Scholarships

- J.R.D. Tata Scholarship (Full Tuition Fee Waiver) 2013-14, 2014-15.
- Finalist for Narotam Seksaria Foundation's Engineering Excellence Scholarship 2015.

Skills and Tools

- Programming Languages: Python, C (Basic).
- Tools: Tensorflow, PyTorch, nltk, SpaCy, numpy, L^AT_EX.

Updated: 20th December, 2020