

# Nikita Moghe

Researcher, Natural Language Processing

✉ nikitamoghe29@gmail.com • 🌐 nikitamoghe.github.io

## Summary

- 7 years of research experience with professional experience at Microsoft (USA and India), PolyAI (UK), and RBC-DSAI (India)
- Focus Areas: Task-oriented Conversational AI, Multilinguality, Personalisation, Representation Learning, Translation Evaluation
- 10 first author publications in top tier NLP venues with recognition and awards
- An avid reader, traveller, fitness enthusiast, and instrumentalist (Keyboard, Sitar, and Ukulele)

## Education

### University of Edinburgh

2019 - Present

Ph.D., School of Informatics, *Awaiting Viva*

Advisors: Alexandra Birch and Mark Steedman

### Indian Institute of Technology Madras

2016 - 2019

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

Adivsors: Balaraman Ravindran and Mitesh M. Khapra

### University of Mumbai

2012 - 2016

B.E., Computer Engineering

## Honours

- Outstanding Paper Award, ACL 2023
- Google PhD Fellowship 2022, Nomination, University of Edinburgh (one of three)
- AIML Apple Scholars 2022, Nomination, University of Edinburgh (one of three)
- Best Poster at RBC-DSAI Workshop May 2019
- Best Poster at Grace Hopper Celebration India 2018
- J.R.D. Tata Scholarship (Full Tuition Fee Waiver) 2013-14, 2014-15

## Professional Experience

### Microsoft Semantic Machines

Summer 2023

Research Intern, Hosts: Harsh Jhamtani, Jacob Andreas

Redmond, USA

- Improving personalisation in LLMs by incorporating user preferences through explicit standing instructions.
- Developed a language-to-program dataset NLSI exploring various scenarios where such instructions are applicable.
- Benchmarked selection and interpretation methods raising new questions in retrieval, reasoning, and semantic parsing.

### PolyAI

Summer 2021

Machine Learning Intern, Hosts: Ben Levin, Ivan Vulić

London, UK

- Improved intent detection to 86% accuracy by using conversational paraphrase detection as an intermediate task.
- Worked on synthetic data generation for few-shot intent detection.
- Conducted exploratory work on non-parametric few-shot multi-label intent detection.

### Robert Bosch Centre for Data Science and Artificial Intelligence

2018 - 2019

Project Associate

Chennai, India

- Worked on the intersection of graph neural networks and knowledge-grounded dialogue systems.
- Developed a framework on incorporating semantic and structural information improving response generation by 7%.

### Microsoft Research

Summer 2017

Intern, Workshop on Artificial Social Intelligence

Bengaluru, India

- Developed a minimalist conversation strategy to improve user engagement using insights from crowdsourced chats.
- Improved domain-specific conversations using information from knowledge graphs and case-based response generation.

## Skills

- Generative AI inc. LLM
- Datasets and Evaluation
- Effective Communication
- Multilinguality, Machine Translation
- Deep Learning
- Stakeholder Management

**Tools:** Python (8 years), PyTorch (5 years), Huggingface (3 years), NumPy (7 years), Git (5 years), LLMs (2 years)

## Publications

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- **Machine Translation Meta Evaluation through Translation Accuracy Challenge Sets** [pdf]  
*Extension to ACES to promote span-based MT evaluation and LLMs are far from perfect at MT evaluation*  
Nikita Moghe, Arnisa Fazla, Chantal Amrhein, Tom Kocmi, Mark Steedman, Alexandra Birch, Rico Sennrich, Liane Guillou  
Under Review, 2024
- **Interpreting User Requests in Context of Natural Language Standing Instructions** [pdf]  
*NLSI evaluates personalisation in LLMs with challenges in retrieval, reasoning, and semantic parsing*  
Nikita Moghe, Patrick Xia, Ben Van Durme, Jason Eisner, Jacob Andreas, Harsh Jhamtani  
Under Review, 2023
- **ACES: Translation Accuracy Challenge Sets at WMT 2023**  
Chantal Amrhein\*, Nikita Moghe\*, Liane Guillou\*  
*Resubmission of ACES to find that MT metrics still show the same trends as last year*  
In Proceedings of Eighth Conference on Machine Translation (WMT 2023), EMNLP 2023.
- **Extrinsic Evaluation of Machine Translation Metrics** [pdf]  
*MT metrics show poor correlation of translation quality with translation utility*  
Nikita Moghe, Tom Sherborne, Mark Steedman, Alexandra Birch  
In Proceedings of Association of Computational Linguistics, ACL 2023, **Outstanding Paper Award**
- **MULTI3NLU++: A Multilingual, Multi-Intent, Multi-Domain Dataset for NLU in Task-Oriented Dialogue** [pdf]  
*Realistic benchmark to study task-oriented dialogue systems in low-resource setting with new insights in transfer learning*  
Nikita Moghe\*, Evgeniia Razumovskaia\*, Liane Guillou, Ivan Vulić, Anna Korhonen, Alexandra Birch  
In Findings of Association of Computational Linguistics, ACL 2023
- **ACES: Translation Accuracy Challenge Sets for Evaluating Machine Translation Metrics** [pdf]  
*Fine-grained evaluation of MT metrics reveals most metrics disregard source content and still rely on surface-level overlap*  
Chantal Amrhein\*, Nikita Moghe\*, Liane Guillou\*  
In Proceedings of Seventh Conference on Machine Translation (WMT 2022), EMNLP 2022.
- **Cross-lingual Intermediate Finetuning improves Dialogue State Tracking** [pdf]  
*Fine-tuning pre-trained multilingual tasks with different but related data and tasks improves downstream applications*  
Nikita Moghe, Mark Steedman, Alexandra Birch  
In Proceedings of 2021 Conference on Empirical Methods in Natural Language Processing, EMNLP 2021.
- **The University of Edinburgh-Uppsala University's Submission to the WMT 2020 Chat Translation Task** [pdf]  
*Chat translation systems are sensitive to context and improve with domain and speaker tags*  
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**  
*Enhancing structural abilities of BERT with explicit structural information from GCNs for 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** [pdf]  
*Enriching factuality in domain-specific dialogue systems by using external textual resources*  
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**[pdf]  
*Facilitating development of code-mixed systems for Indic languages*  
Suman Banerjee, Nikita Moghe, Siddhartha Arora, Mitesh M. Khapra  
In Proceedings of COLING 2018, International Committee on Computational Linguistics.

## Service

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### Organizer

- Workshop on Graphs and more Complex structures for Learning and Reasoning (GCLR) at AAAI-21.  
Moderated the panel on *Learning and Reasoning with Complex graphs - a multi-disciplinary challenge*.
- CDTalks (2021-2022) - a monthly seminar series.

### Reviewer/Program Committee

- AAAI, ACL, ACL Rolling Review, COLING, EACL, EMNLP, NAACL
- Workshops: NILLI, CtrlGEN, NLP4ConvAI

### Mentoring

- Hrichika Nag - MInf Dissertation 2022-2023
- Widening NLP, EMNLP 2021 - Graduate School
- Women in STEM Mentorship, Informatics, 2021-2022

**Talks** at NLPWithFriends, Unbabel-IST Seminars, Alan Turing Institute, Huawei, Aveni, PolyAI, Microsoft