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## Research Interests

I am broadly interested in Natural Language Processing, Machine Learning, and Information Retrieval. My recent research has focused on code generation using large language models (LLMs). Specifically, I aim to build and evaluate CodeLLMs to assist software engineering.

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## Education

- 2022 – current **PhD, Natural Language Processing**, The University of Edinburgh, Scotland, UK.  
Research Unit: Institute for Language, Cognition and Computation (ILCC)  
Research Areas: Program Synthesis, Code Generation, Neuro-Symbolic Reasoning, Compositional Generalisation, Large Language Models  
Advisor: Prof. [Shay Cohen](#) and Prof. [Antonio Vergari](#)
- 2020 – 2021 **M.Sc. by Research, Informatics**, The University of Edinburgh, Scotland, UK.  
Research Unit: Institute for Language, Cognition and Computation (ILCC)  
Research Areas: Unsupervised Parsing, Knowledge Graph Completion  
Grade: Pass with Distinction  
Advisor: Prof. [Shay Cohen](#)
- 2011 – 2015 **B.E. in Electronics and Communication**, CMR Institute of Technology, Bangalore, India.  
GPA: 7.58/10

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## Work Experience

- Oct 2021 – July 2022 **Applied Research Scientist - NLP**, Cookpad, Bristol, UK.  
  - Operationalized an active learning, intermediate-task fine-tuning based multilingual meal-classification algorithm.
  - Implemented a label suggestion algorithm for efficient recipe tagging.
- May 2018 – Sept 2020 **Senior Software Developer - NLP**, Niki.ai, Bangalore, India.  
  - Developed a real-time pause detection algorithm on speech signals to identify end-of-speech conditions.
  - Designed a probabilistic model to classify if an utterance is a valid parse or not.
  - Developed a bot that could respond to about 75 FAQs in regional languages and English.
  - Built a character-level RNN model to classify utterances as 'Hinglish' words with minimum lexicon support.
  - Created an algorithm to automatically generate contextual synonyms and augment concept-grammar data.
- Sep 2016 – Feb 2018 **Data Scientist - Research and Development**, Dave.ai, Bangalore, India.  
  - Built a time series model to generate weekly/monthly sales forecasts of products with scarce data.
  - Devised a robust machine learning model to predict and optimize e-commerce metrics for retailers.
  - Created an image search engine to recommend similar images based on segmentation as a selective search.
- Feb 2016 – May 2016 **Junior Data Scientist**, Hotify.ai, Bangalore, India.  
  - Aggregated tweets from pre-selected news sources to estimate trending hashtags.
  - Created actionable insights by analyzing how select twitter users through A/B testing react to real-time events.
  - Prepared training data by examining RSS feeds of news sources and rated each source using multiple factors.

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## Internships

- Aug 2024 – Feb 2025 **Research Intern**, Huawei R&D, Edinburgh, UK.  
Topic: Integrating knowledge graphs in LLMs for language-to-code generation to solve math reasoning problems  
Mentor: Prof. [Jeff Z. Pan](#)

- Aug 2021 – Oct 2021 **Research Assistant**, Usher Institute (University of Edinburgh) and Institute of Health Informatics (UCL), Edinburgh, UK.  
Topic: Clinical Natural Language Processing for Automated Medical Coding [Details]  
Mentor: Prof. [Honghan Wu](#) and Dr. [Hang Dong](#)
- May 2021 – Aug 2021 **Student Developer**, Google Summer of Code (GSoC), Remote.  
Topic: Identify Joint Meaning Construal Patterns using Co-speech Gestures [Details] [Slides]  
Mentor: Prof. [Tiago Torrent](#)

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## Selected Publications

- NAACL 2025 What can Large Language Models Capture about Code Functional Equivalence? [PDF]  
(Findings) **Nickil Maveli**, Antonio Vergari, Shay Cohen  
*Findings of NAACL 2025*
- ACL 2022 (Findings) Co-training an Unsupervised Constituency Parser with Weak Supervision [PDF]  
**Nickil Maveli**, Shay Cohen  
*Findings of ACL 2022*
- WNUT@EMNLP 2020 EdinburghNLP at WNUT-2020 Task 2: Leveraging Transformers with Generalized Augmentation for Identifying Informativeness in COVID-19 Tweets [PDF]  
**Nickil Maveli**  
*Proceedings of the 2020 EMNLP Workshop W-NUT*
- Master's Thesis Co-training a Weakly Supervised Constituency Parser of Natural Language [PDF]  
**Nickil Maveli**

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## Awards

- 2025 Student Volunteer Award at NAACL 2025.
- 2022 Student Volunteer Award at ACL 2022.
- 2022 Fully-funded UKRI CDT in NLP scholarship to pursue PhD studies.

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## Invited Talks

- July 2025 Student Panel for MSc Dissertation Q&A event
- July 2022 International Society for Gesture Studies (ISGS), Symposium IV [Details] [Video]
- Dec 2021 University of Oxford, IMCC seminar [Details] [Video]
- Dec 2017 Techfest IIT Bombay, Artificial Intelligence summit [Details]

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## Technical Skills

- Specialties Natural Language Processing, Machine Learning, Deep Learning, Reinforcement Learning, Recommender Systems, Time-series Forecasting
- Languages Python, R, Matlab, Javascript, SQL, HTML/CSS,  $\text{\LaTeX}$
- Tools and Frameworks Pandas, NumPy, SciPy, Matplotlib, Scikit-Learn, NLTK, Keras, PyTorch, TensorFlow, PySpark, Flask, Django, Docker, Kubernetes, AWS, Jira, Git, Elastic Stack, MongoDB

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## Key Achievements

- 2022 Selected to audition as a DataCamp instructor for the “Introduction to mlflow” course.
- 2022 Secured Top 3% in the Evaluating Student Writing Challenge hosted on Kaggle; Won a silver medal. [Details]
- 2021 Selected to participate in the Lisbon Machine Learning School (LxMLS 2021). [Details]
- 2020 Secured Top 2% in the Jigsaw Multilingual Toxic Comment Classification Challenge hosted on Kaggle; Won a silver medal. [Details]

- 2019 Finished 2<sup>nd</sup> out of 479 competitors in the Quality Forecasting in Cement Manufacturing Challenge hosted on CrowdAnalytix; Won \$2,500 as prize money; Winner representing India. [[Details](#)]
- 2019 Secured Top 3% in the Quora Insincere Questions Classification Challenge hosted on Kaggle; Won a silver medal. [[Details](#)]
- 2018 Finished 2<sup>nd</sup> out of 750 competitors in the Predicting How Points End in Tennis Challenge hosted on CrowdAnalytix; Won \$2500 as prize money; [Featured in Tennis Australia's official press release](#). [[Details](#)] [[Media Coverage](#)]
- 2017 Placed 3<sup>rd</sup> out of 2975 competitors in the Click Prediction Challenge hosted on AnalyticsVidhya; Awarded a cash prize of ₹25000. [[Details](#)]
- 2016 – present Among Top Stack Overflow Users for tags—Python, Pandas, NumPy, Matplotlib with an overall 25000+ reputation score and more than 5 million post views worldwide. [[Details](#)]

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## Academic Services

### Teaching Assistant

- 2024-25 Natural Language Understanding, Generation, and Machine Translation (INFR11157) - Tutor
- 2023-24 Cohort '22 Representative, CDTalks Organizer
- 2023 Accelerated Natural Language Processing (INFR11125) - Demonstrator
- 2022 Accelerated Natural Language Processing (INFR11125) - Tutor, Demonstrator, TA (Piazza)

### Reviewer

- 2025-current COLM
- 2022-current ACL, NAACL, EMNLP
- 2021 ACL, AmericasNLP
- 2020 W-NUT@EMNLP (Shared Task 2), Scipy (Tutorials, Talk & Poster Presentations)

### Volunteer

- 2021 ACL, ICML, NAACL, ICLR, EACL
- 2020 EMNLP

### Respondent

- 2020 Semantic Scholar Diary Study project conducted by the Allen Institute for AI

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## Open Source Contributions

- 2022 – present ivy [[Commits](#)]