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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 multilingual unsupervised syntactic parsing, semi-supervised learning, interpretability and robustness of machine learning algorithms, and understanding social inequality and bias in language.

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## Education

- 2022 – current **PhD, Informatics**, The University of Edinburgh, Scotland, UK.  
Research Major: Natural Language Processing, Machine Learning  
Research Unit: Institute for Language, Cognition and Computation (ILCC)  
Research Areas: Neuro-Symbolic Models, Compositional Generalisation, Unsupervised Learning of Latent Structures  
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 – Sept 2022 **Applied Research Scientist - NLP**, Cookpad, Bristol, UK.  
  - Operationalized an active learning, intermediate-task fine-tuning based multilingual meal-classification algorithm.
  - Improved the metrics on a diverse set of downstream tasks for recipes by 45% compared to existing methods.
- 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 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

- 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

- 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

- 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 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

### Reviewer

- 2022 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