Nilay Patel

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EDUCATION

Ph.D in Computer Science @ University of California, Santa Cruz 2022→

Advisor: Jeffrey Flanigan
Relevant Courses: Natural Language Processing I-III, Adv. Deep Learning for NLP, Linguistics, Group & Ring Theory, (Abstract) Linear Algebra, Real Analysis, Measure Theory

M.S. in Natural Language Processing @ University of California, Santa Cruz ◇ GPA: 3.93/4 2020→2021

B.S. in Computer Science & Applied Math @ Florida State University ◇ GPA: 3.70/4 2016→2020

RESEARCH

[Unnamed Paper for Anonymity] *(In submission @ NAACL 2025)*
Patel et al., 2025.

Work done on Autoformalization.

Towards Improved Multi-Source Attribution for Long-Form Answer Generation *(NAACL 2024)*
Patel et al., 2024.

Investigated multi-source attribution abilities of LLMs, and demonstrated a simple approach to augment existing QA data for this task. Also, introduced PolitiCite, a very-long-form multi-source QA dataset.

A New Approach Towards Autoformalization *(preprint on arXiv)*
Patel, Saha, and Flanigan, 2023.

Proposed a new approach towards autoformalization of mathematics by breaking the problem into four simpler subtasks which LLMs (e.g.) are better at handling. Also provides a hand-curated dataset of 50 examples for subtask 1.

Forming Trees with Treeformers *(RANLP 2023)*
Patel and Flanigan, 2023.

Demonstrated the addition an inductive bias for learning hierarchical structure significantly improves performance of a transformer on tasks such as translation, summarisation, natural language understanding, and compositional generalization.

Knowledge Distillation in Multiple Steps *(M.S. Capstone Project)*
(Patel, Alsalihy, King, and Parthasarathy, 2021.)

Demonstrated that improved performance of a "teacher" model does not correlate with student model perplexity, but can be mitigated by distilling in multiple steps.

Recommendation Algorithms for Student Evaluation Data *(Undergraduate Honors Thesis)*
(Patel, 2019.)

Built a recommender system to match professors and courses based on student evaluations.

SKILLS

Languages	**Python**, Lean, Haskell, SQL, C/C++, {Java/Type}Script, Julia
Frameworks/Libraries	PyTorch, huggingface, numpy/scipy, pandas, matplotlib/seaborn, sklearn
Tools	Docker, Git, standard Unix tooling, LaTeX, LLMs

WORK HISTORY

Applied Scientist Intern @ Amazon AI June 2023 - December 2023
Worked with large language models on challenging problems in open-domain web question-answering.

Software Engineer @ Computational GeoInterpretation September 2021 - July 2022
Designed and productionized state-of-the-art geophysical image segmentation AI.

- Researched & implemented new methods, improving AI image segmentation training & inference speed
- A complete (solo) redesign/rewrite of our data storage and loading software to improve speed, scalability, usability, and maintainability (halved total code).

Frontend Developer (Intern) @ Diverse Computing Inc. January 2018 - June 2018
Developed web applications for various law enforcement applications. Designed efficient databases, responsive UIs, and optimized backend code.