SEEWON CHOI

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EDUCATION

University of Pennsylvania Aug 2023 - Present
Ph.D. in Computer and Information Science *Philadelphia, US*
Advisor: Rajeev Alur
Awards: Richard Foulke Day Memorial Fellowship (2023)

University of Cambridge Oct 2019 - June 2022
B.A. in Computer Science *Cambridge, UK*
Dissertation: *Encoding Representations of Propositional Logic*
· Supervisor: Mateja Jamnik
Academic Record: Class I
Awards: Rosemary Murray Scholarship (2020, 2021, 2022)

RESEARCH INTERESTS

My research interests lie in the intersection of logic and AI. My current research focuses on neurosymbolic learning, a paradigm that combines neural and symbolic approaches to improve the accuracy, robustness, and interpretability of deep neural networks. I am currently working on the problem of approximating gradients of black-box functions to enable neurosymbolic learning with arbitrary symbolic programs.

RESEARCH EXPERIENCE

Neurosymbolic Learning with Black-box Programs Oct 2023 - Present
University of Pennsylvania

∗ *Beyond Differentiability: Neurosymbolic Learning with Black-box Programs* Under Review
Alaia Solko-Breslin*, Ziyang Li*, **Seewon Choi**, Neelay Velingker, Rajeev Alur, Mayur Naik, Eric Wong

· Designed and implemented a general sampling-based framework for neurosymbolic learning for end-to-end training involving non-differentiable symbolic parts

rep2rep: Automatic Representation Choice for AI Tools Sep 2021 - Sep 2023
University of Cambridge

∗ *Generation of Visual Representations for Multi-Modal Mathematical Knowledge* AAAI24 Demo
Lianlong Wu*, **Seewon Choi***, Daniel Raggi*, Aaron Stockdill, Grecia Garcia Garcia, Fiorenzo Colarusso, Peter C.H. Cheng, Mateja Jamnik

· Built an AI mathematics tutoring system that adapts representation based on user's expertise
- Bayesian algebra, contingency tables, probability trees, area diagrams

· Developed a program that automatically transforms between representations of propositional logic
- propositional formulas, Venn diagrams, binary decision diagrams

OTHERS

· **Technical Skills:** Python, Java, C, Standard ML, Coq, Prolog, Typescript, React Native