

ELLIE YU-HSI CHENG



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EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

2022 - PRESENT

PH.D. IN COMPUTER SCIENCE

- Advisor: Michael Carbin
- Research Focus: Probabilistic Programming, Neurosymbolic AI

UNIVERSITY OF CALIFORNIA, LOS ANGELES

2018 - 2022

B.S. IN COMPUTER SCIENCE AND ENGINEERING

HONORS AND AWARDS

COMPUTING RESEARCH ASSOCIATION (CRA) OUTSTANDING UNDERGRADUATE RESEARCHER
AWARD HONORABLE MENTION

2022

INVITED TALKS

FLIP-HOISTING: A PROBABILISTIC PROGRAM OPTIMIZATION FOR EXACT INFERENCE

2021

THE INTERNATIONAL CONFERENCE ON PROBABILISTIC PROGRAMMING (PROBPROG)

CONFERENCE PUBLICATIONS

HOW CAN I EXPLAIN THIS TO YOU? AN EMPIRICAL STUDY OF DEEP NEURAL NETWORK
EXPLANATION METHODS

2020

JEYA VIKRANTH JEYAKUMAR, JOSEPH NOOR, **YU-HSI CHENG**, LUIS GARCIA, AND MANI SRIVASTAVA.
ADVANCES IN NEURAL INFORMATION PROCESSING SYSTEMS (NEURIPS).

NON-ARCHIVAL PUBLICATIONS

VERIFYING PERFORMANCE PROPERTIES OF PROBABILISTIC INFERENCE

2023

ERIC ATKINSON, **ELLIE Y. CHENG**, GUILLAUME BAUDART, LOUIS MANDEL, MICHAEL CARBIN.

THE WORKSHOP ON VERIFICATION OF PROBABILISTIC PROGRAMS (VERIPROP).

<https://arxiv.org/abs/2307.07355>

FLIP-HOISTING: A PROBABILISTIC PROGRAM OPTIMIZATION FOR EXACT INFERENCE

2021

YU-HSI CHENG, STEVEN HOLTZEN, GUY VAN DEN BROECK, TODD MILLSTEIN.

THE INTERNATIONAL CONFERENCE ON PROBABILISTIC PROGRAMMING (PROBPROG).

<https://elliecheng.com/publications/ChengPROBPROG21.pdf>

Extended draft: <https://arxiv.org/abs/2110.10284>

DRAFTS

INFERENCE PLANS FOR DYNAMIC HYBRID PROBABILISTIC INFERENCE

2023

ELLIE Y. CHENG, ERIC ATKINSON, GUILLAUME BAUDART, LOUIS MANDEL, MICHAEL CARBIN.

IN SUBMISSION.

EXPERIENCE

STRIPE

JUN - SEP 2022

SOFTWARE ENGINEERING INTERN

- Built pipeline for explaining machine learning models used by Stripe using SHAP in Python

META PLATFORMS

SEP - DEC 2021

SOFTWARE ENGINEERING INTERN

- Improved AI infrastructure that serves features for machine learning models for various products, including Facebook Ads using Python and C++

META PLATFORMS

JUN - SEP 2020

SOFTWARE ENGINEERING INTERN

- Improved ranking systems and recommendation infrastructure for Facebook Events notifications aimed at growing the Events product using primarily Hack (PHP) and SQL

STATISTICAL AND RELATIONAL ARTIFICIAL INTELLIGENCE LAB, UCLA

JAN 2020 - JUN 2022

UNDERGRADUATE RESEARCH ASSISTANT

- Advisors: Steven Holtzen, Guy Van den Broeck, Todd Millstein
- Researched optimizations and improvements for the probabilistic programming language Dice in OCaml based on traditional compiler optimizations to reduce program compilation size and inference runtime

UNDERGRADUATE RESEARCH ASSISTANT

- Advisors: Luis Garcia, Mani Srivastava
- Surveyed explainability methods (Anchor, LIME, SHAP, Grad-CAM++, saliency maps) to determine which is preferred by end-users as an explanation for Deep Neural Networks performing classification tasks in different data domains (text, image, audio, sensory)