Maddy Bowers

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Education

Massachusetts Institute of Technology (Cambridge, MA)
PhD in EECS 2020 – Present
Advisors: Armando Solar-Lezama and Joshua B. Tenenbaum

Columbia University (New York, NY)
B.A. in Computer Science & B.A. in Chemistry 2016 – 2020
Summa cum Laude, Phi Beta Kappa (Junior), GPA: 4.08 (Comp Sci: 4.22, Chem: 4.17), Dean's List

Additional Research Experience

Microsoft Research
Research Intern (Cambridge, MA) Summer 2021
Advisor: Adam Tauman Kalai
Topic: Large language models for program synthesis

Massachusetts Institute of Technology, Learning Matter Group
Research Assistant 2019 – 2020
Advisor: Rafael Gomez-Bombarelli
Topic: Graph-based deep learning for chemical simulations

Columbia University, Theoretical Chemistry Group
Computational Research Assistant 2017 – 2020
Advisor: Angelo Cacciuto
Topic: CUDA-accelerated chemical simulation

Columbia University, Materials & Spectroscopy Group
Research Assistant Summer 2017
Advisors: Jonathan Owen & Andrew Crowther
Topic: Computational analysis of spectroscopic properties of quantum nanoplatelets for solar cells

Awards

William A. Martin Master's Thesis Award (2024), MIT (2 given)

NSF Graduate Research Fellowship (2022)

Summa cum Laude (2020), Columbia University

Computer Science Scholarship Award (2020), Columbia University – for academic merit (2 given)

Richard Bersohn Prize (2020), Columbia University – for academics and research in chemistry (1 given)

Junior Phi Beta Kappa (2019), Columbia University – awarded to top 2% of undergraduates

Class of 1939 Fellowship (2019), Columbia University

Columbia College Summer Funding Program Fellowship (2019), Columbia University

Guthikonda Fellowship (2018), Columbia University

Science Research Fellowship (2016), Columbia University

Publications

Stochastic Lazy Knowledge Compilation for Inference in Discrete Probabilistic Programs (*PLDI 2025).*
Maddy Bowers*, Alexander K. Lew*, Joshua B. Tenenbaum, Armando Solar-Lezama, Vikash Mansinghka.

Lazy Knowledge Compilation for Discrete PPLs (*Languages For Inference Workshop at POPL 2025).*
Maddy Bowers*, Alexander K. Lew*, Joshua B. Tenenbaum, Vikash Mansinghka, Armando Solar-Lezama.

Toward Probabilistic Coarse-to-Fine Program Synthesis (*Languages for Inference Workshop at POPL 2024).*
Maddy Bowers*, Alexander K. Lew*, Vikash Mansinghka, Joshua B. Tenenbaum, Armando Solar-Lezama.

LILO: Learning Interpretable Libraries by Compressing and Documenting Code (*ICLR 2024).*
Gabriel Grand, Lionel Wong, Maddy Bowers, Theo X. Olausson, Muxin Liu, Joshua B. Tenenbaum, Jacob Andreas.

Language Models Can Teach Themselves to Program Better (*ICLR 2023).*
Patrick Haluptzok, Maddy Bowers, Adam Tauman Kalai.

Top-Down Synthesis For Library Learning (*POPL 2023).*
Maddy Bowers, Theo Olausson, Catherine Wong, Gabriel Grand, Kevin Ellis, Joshua B Tenenbaum, and Armando Solar-Lezama.

Generating Programming Puzzles to Train Language Models (*Deep Learning for Code Workshop @ ICLR 2022).*
Patrick Haluptzok, Maddy Bowers, Adam Tauman Kalai.

Representing Partial Programs With Blended Abstract Semantics (*ICLR 2021).*
Maxwell Nye, Yewen Pu, Maddy Bowers, Jacob Andreas, Joshua B. Tenenbaum, Armando Solar-Lezama.

Universal Reshaping of Arrested Colloidal Gels via Active Doping (*Journal of Chemical Physics 2020).*
Stewart Mallory, Maddy Bowers, Angelo Cacciuto.

Active Sculpting of Colloidal Crystals (*The Journal of Chemical Physics 2019).*
Shibananda Das, Maddy Bowers, Clara Bakker, Angelo Cacciuto.

Predicting Scalar Coupling Constants Through Deep Learning (*Columbia Undergraduate Research Symposium 2019).*
Maddy Bowers, Wujie Wang, Rafael Gomez-Bombarelli.

Teaching

Teaching Assistant in Discrete Mathematics (2019), Columbia University

Teaching Assistant in Calculus III (2018), Columbia University

Tutor in Chemistry Help Room (2018-2019), Columbia University

Service & Community

MIT Programming Languages Review, Program Committee, 2023 & 2024

Co-Chair of Student Volunteering, PLDI 2021 & PLDI 2022

MIT EECS Grad Student Association, VP of Diversity Equity & Inclusion (2022)

MIT EECS THRIVE, Diversity Equity & Inclusion, Board Member & Organizer (2021-Present)

MIT CSAIL Research Council, Board Member (2021-2024)