Nathan Mull[1]
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About

I am generally interested in logic and computing, but more specifically in type theory and normalization. I will be defending my dissertation at the end of the 2023 academic year and I am targeting teaching faculty positions in Boston.

Education

Ph.D. in Computer Science. *University of Chicago, 2023 (Expected).*
Dissertation: On Normalization in Pure Type Systems via Translation.

M.S. in Computer Science. *University of Chicago, 2020.*
M.S. Paper: CDCL SAT Solvers, Subsystems of Resolution, and the Ordered Decision Strategy.

B.A. in Pure Mathematics with Honors. *University of California at Berkeley, 2016.*
B.A. in Computer Science. *University of California at Berkeley, 2016.*

Research

Weak Normalization implies Strong Normalization in Generalized Non-Dependent Pure Type Systems. *In preparation, draft upon request, 2023.*

An Irrelevance-Eliminating Translation for Tiered Pure Type Systems. *Submitted to the Post-Proceedings of the 28th International Conference on Types for Proofs and Programs (TYPES), 2022.*

Strong Normalization from Weak Normalization in Non-Dependent Pure Type Systems via Thunkification. *Research Report, 2022.*

A Generalized Translation of Pure Type Systems. *Extended abstract presented at the 28th International Conference on Types for Proofs and Programs (TYPES), 2022.*

Joint with Shuo Pang and Alexander Razborov. On CDCL-based Proof Systems with the Ordered Decision Strategy. *SIAM Journal of Computing, 2022. (Conference version in the Proceedings of the 23rd International Conference on Theory and Application of Satisfiability Testing (SAT), 2020).*

Joint with Daniel J. Fremont and Sanjit A. Seshia. On the Hardness of SAT with Community Structure. *In the Proceedings of the 19th International Conference on Theory and Application of Satisfiability Testing (SAT), 2016.*

Awards

GAANN Fellowship. *Awarded by the Computer Science Department at the University of Chicago, 2016.*

Email Archives Fellowship. *Awarded by the Digital Library Development Center at the University of Chicago, 2022.*

[1] I use the pronouns he/him/his.

Projects

Attachment Converter. *Open-source tool for batch-converting attachments in email inboxes into formats that are archive stable.*

Teaching

Instructor. *University of Chicago.*

> Fundamentals of Computer Programming in Swift (CMSC 10500). *Summer 2022, Summer 2021, Summer 2020, Summer 2019, Summer 2018.*

Teaching Assistant. *University of Chicago.*

> Mathematics for Computer Science: Discrete Mathematics (MPCS 50103). *Winter 2023.*
>
> Programming Languages (CMSC 22100). *Fall 2022.*
>
> Type Theory (CMSC 22500). *Spring 2022, Spring 2021, Spring 2020.*
>
> Algorithms (MPCS 55001). *Winter 2022, Fall 2021.*
>
> Programming Proofs (CMSC 22400/32400). *Winter 2021.*
>
> Honors Introduction to Programming (CMSC 16100). *Fall 2020, Fall 2019, Fall 2018.*
>
> Mathematics for Comptuer Science and Data Analysis (CAPP 30271). *Winter 2020.*
>
> Functional Programming (CMSC 22300). *Spring 2019.*
>
> Mathematical Foundations of Machine Learning (CMSC 25300). *Winter 2019.*
>
> Machine Learning (MPCS 53111). *Spring 2018.*
>
> Theory of Algorithms (CMSC 27200). *Winter 2018.*
>
> Honors Discrete Mathematics (CMSC 27130). *Fall 2017.*