ANDREW BLINN

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VISION

I use programming language theory to explore and explain compositional interfaces, working to make engagement with abstraction more tangible and more fun.

FOCUSES

Programming Languages + Liveness + Learning · Human-Computer Interaction

PAPERS

Syntactic Completions with Material Obligations · **OOPSLA** · *2025*
David Moon, <u>Andrew Blinn</u>, Thomas Porter, Cyrus Omar
Material obligations unify structure editing and error-correcting parsing

Statically Contextualizing Large Language Models with Typed Holes · **OOPSLA** · *2024*
<u>Andrew Blinn</u>, Kevin Li, June Hyung Kim, Cyrus Omar
How to use holes & language servers to build global context for LLM code completions

Total Type Error Localization and Recovery with Holes · **POPL** · *2024*
Eric Zhao, Raef Maroof, Anand Dukkipati, <u>Andrew Blinn</u>, Zoe Pan, Cyrus Omar
A formal account of static error localization & recovery as applied to editor semantic services

Gradual Structure Editing with Obligations · **VL/HCC** · *2023*
David Moon, <u>Andrew Blinn</u>, Cyrus Omar
Generalizing program holes to *syntactic obligations* allows more text-like structured editing

An Integrative Human-Centered Architecture for Interactive Programming Assistants · **VL/HCC** · *2022*
<u>Andrew Blinn</u>, David Moon, Eric Griffis, Cyrus Omar
A syncretic account of programming assistants including a formalization of suggestion sensibility

Filling Typed Holes with Live GUIs · **PLDI** · *2021*
Cyrus Omar, David Moon, <u>Andrew Blinn</u>, Ian Voysey, Nick Collins, Ravi Chugh
Livelits embed persistent user-defined GUIs in code, enabling live inline graphical feedback

WORKSHOP PAPERS

Toward a Live, Rich, Composable, and Collaborative Planetary Compute Engine · **PROPL** · *2024*
Alexander Bandukwala, <u>Andrew Blinn</u>, Cyrus Omar
A concept sketch for a graphical programming environment for climate science applications

Tylr - A Tiny Tile-based Structure Editor · **TyDe** · *2022*
David Moon, <u>Andrew Blinn</u>, Cyrus Omar
Tylr combines traditional and structured editing approaches via a novel destructuring mechanism

SCHOOL

University of Michigan · **Ph.D Candidate, Computer Science** · *Now*
Contextualizing coding with types, interfaces, & language models with Cyrus Omar @ FP Lab

University of Michigan · **Master's of Science, Computer Science** · *2023*
Coursework in PL theory, program synthesis, category theory, HCI, & the psychology of learning

University of Toronto · **H.B.Sc, Mathematics & Computer Science** · *2019*
Graduate coursework in abstract algebra, compilers, & graphics. Advised by Gary Baumgartner

INDUSTRY

TODAQ Toronto · **Full-stack development in Clojure** · *2019 - 2020 (2 years)*
Built novel front-end interfaces to sharpen the materiality of distributed digital assets.
Implemented core back-end features for a decentralized digital asset management protocol

SPEAKING ✈

Accepted speaker at OOPSLA · *2024* · *Pasadena* · *Recorded Talk* · *Slides*
Presented Statically Contextualizing Large Language Models with Typed Holes

Invited speaker at RacketCon · *2019* · *Salt Lake City* · *Recorded Talk* · *Slides*
Introduced Fructure, a prototype structured interaction engine for edit-time term-rewriting

Accepted speaker at Midwest PL Summit · *2023* · *Ann Arbor* · *Slides*
Progress report on type-directed prompt construction for LLM-powered code completion

Accepted speaker at VL/HCC · *2022* · *Rome* · *Recorded Talk* · *Slides*
Presented an integrative human-centered architecture for interactive programming assistants

Guest Lecturer · *2023 & 2022* · *Ann Arbor*
Introduction to metaprogramming featuring Racket for EECS 490 - Programming Languages

CONFERENCES 🚪

Programming Committee Member · 2025: LIVE + HATRA · 2024: LIVE + Onward! + HATRA

Student Volunteer · 2021: SPLASH/OOPSLA

Seat Filler · 2025: ARIA Safeguarded AI Workshop + Ink & Switch London Social
2024: Ink & Switch Unconf + OOPSLA + LIVE + HATRA + Gradient Retreat
2023: MWPLS + Local First + Fission TrainJam + Strange Loop + Gradient Retreat + Causal Islands
2020 - 2022: VL/HCC + Gradient Retreat + SPLASH/OOPSLA + HATRA + LIVE
2018 - 2019: Racket Summer School + Clojure North + OPLSS + ICFP + Strange Loop + RacketCon

TEACHING 🖥

Course Development · *2022 - Now* · *University of Michigan*
Lead engineering on the Hazel software exercises platform, developed assignments for EECS 490

Course Development · *Summer 2018* · *University of Toronto*
Designed course materials for CSC 324 including mini algebraic stepper + pattern matching language

Teaching Assistantship · *2018 - Now* · *Universities of Michigan & Toronto*
2023, 2022, 2021 University of Michigan EECS 490: Programming Languages
2019, 2x 2018, 2017 University of Toronto CSC 324: Principles of Programming Languages
2018 University of Toronto CSC 104: Introduction to Computational Thinking

MENTORSHIP 💬

Russell Rozenbaum & Cyrus Desai: Structured Editing for LLMs · *2024 - Now*
Investigating supporting agentic coding with contextual semantic editing actions

June (Jacob) Kim: Typed hole filing with LLMs in TypeScript · *2024 - 2025*
Extracting semantic information for prompt construction from the TypeScript language server

Xiang (Kevin) Li: Type-constrained LLM Code Completion via token masking · *2023 - 2024*
Modifying LLM decoding to enforce semantic as well as syntactic invariants

Zachary Eichenberger & Eric Fan: Typed structured editing + Deep reinforcement learning · *2021 - 2023*
Structured code completion via RL on graph neural networks; co-mentorship with Ethan Brooks

Yash Gaitonde: Interfaces for live feedback in teaching IDEs · *2021 - 2022*
Implementing live test feedback in the Hazel IDE, deployed to a class of 100 undergraduates

SOFTWARE 🗗

IDE Design, Implementation, Deployment, and Analytics with Cyrus Omar · *2020 - Now*
Led a ground-up rewrite of the Hazel IDE, deployed to 100 undergraduates

Investigations in Dynamic, Interactive Algebraic User Interfaces · *2022 - Now*
Exploring tangibility and explorability in expository math and meta-math with nool and furl

Independent Study in Structured Editing in Racket with Gary Baumgartner · *Summer 2017*
Self-directed studies in languages tooling resulting in Fructure and Containment Patterns

Variability-aware Data Structures with Marsha Chechik & Ramy Shanin · *2018 - 2019* · *Slides*
Research in variational analysis of SPLs. Built SpyShare, a tool to visualize structure sharing