

Theodore Bjurlin

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Research Interests

I'm interested in how novel user interfaces and designs can be used to transform how people think about programming languages. In particular, I want to explore how ideas from the social and cognitive sciences, media studies, art, and aesthetics can be used to encourage new ways of learning and thinking in software interfaces.

Education

Hendrix College, BA in Computer Science, Minor in Studio Art Sept 2021 – May 2025

- **Thesis:** A Factory Game for Teaching Functional Programming – advised by Dr. Brent Yorgey
- **Relevant Coursework:** Programming Languages, Functional Programming (Haskell), Mobile Software Development, Sociology of Education, Aesthetics in Contemporary Art, Operating Systems and Concurrency

Research Experience

Indexed Collections in Disco June 2024 – Sept 2024
Hendrix College – Conway, AR

- Contributed to Disco, a teaching language for discrete math
- Implemented indexed collections into Disco's type system
- Explored the uses of indexed collections as an educational tool for discrete mathematics and combinatorics

New Ways of Knowing through Community Knowledge Mapping Aug 2024 - Current
Hendrix College – Conway, AR

- Partnering with another student to explore community issues at Hendrix through knowledge mapping
- Using notes and string on a bulletin board to allow students to share and develop connections between their ideas over the course of the semester
- Tested the viability of knowledge mapping as a method for community engagement

Teaching Experience

Computer Science Teaching Assistant Sept 2022 – Current
Hendrix College – Conway, AR

- Assisted with lab instruction for CSCI 150 Foundations of Computer Science and CSCI 151 Data Structures
- Guided students working on a variety of projects and assignments during office hours

Work Experience

Software Engineer Intern

June 2023 – Aug 2023, Jan 2024 - Sept 2024

Disco Tray Studios – Conway, AR

- Developed a robust database interface for the Lake Nixon Summer Camp Scheduling App
- Researched computer vision tools for scanning water quality testing strips
- Developed a practical user interface for logging water testing strips that was used at an educational summer camp
- Created an interface for researchers to access the gathered water quality data for use in a GIS system

Projects

Currently developing *Typez*

- Designing a factory building video game to teach functional programming
- Researching learning methods, video game design, and theories of edutainment through the lens of cognitive science
- Tools Used: Rust, Godot

Contributed to the Disco language

github: disco-lang/disco

- Implemented type-indexed collections into disco to allow more robust reasoning about the size of collections
- Tools Used: Haskell

Water Quality Testing App

github: DiscoTrayStudios/WaterQualityTester

- Developed a basic computer vision system for scanning water test strips, as well as a backend for storing and accessing the data gathered from multiple devices for wide scale analysis.
- Tools Used: Flutter, Dart, OpenCV, C++, Firebase

Haskell Implementation of Intercal-72

github: tedbjurlin/H-Intercal

- Wrote an Intercal-72 interpreter in Haskell, implementing the full specification with a few extra features from C-Intercal
- Tools Used: Haskell

Talks

- *CLAS – A Linear Algebra Calculator Written in Java*
With Katherine Reid
Hendrix Rhodes Sewanee Mathematics Conference at Sewanee. April 14, 2024
- *Fixed Size Collections for Discrete Math*
Hendrix College Student Research Presentations. September 26, 2024
- *A Mobile App for Water Quality Testing*
Hendrix College Student Research Presentations. September 26, 2024

Funding

- Odyssey Grant for research on the Disco Programming Language
- Programming Languages Mentoring Workshop (PLMW) scholarship to attend the International Conference on Functional Programming (ICFP) in Milan, Italy

Community Involvement

Student Bike Shop Mechanic

Sept 2023 - Present

Hendrix College – Conway, AR

- Maintained free library rental bikes for the Hendrix community
- Provided free bike repair for students and campus community members
- Ran outreach events like bike repair workshops and documentary nights

Hendrix Climbing Coalition Vice President

Sept 2023 - Present

Hendrix College – Conway, AR

- Led climbing trips into the Ozark Mountains
- Taught new climbers technical skills in a safe, encouraging environment

Membership

- Association of Computing Machinery (2023 - Present)
- Pi Mu Epsilon (2024 - Present)