

# Alexander Kozik

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## EDUCATION

### Cornell University

*B.A. Computer Science, B.A. Mathematics | Grade: 3.963/4*

Ithaca NY

*Aug 2022 – May 2025*

## EXPERIENCE

### Full Stack Software Engineer

Aug 2023 – Present

*CMSX - A course management platform used by over 8,000 students each semester*

*Ithaca, NY*

- Significantly enhanced professors' user experience, adding the ability to grant deadline extensions using a CSV.
- Performed code reviews and tested new features. Created about 100 GitHub commits.
- Currently working on migrating the staff grading interface from JSP to React.

### Teaching Assistant for Data Structures and Functional Programming

Aug 2023 – Present

*Cornell Bowers CIS*

*Ithaca, NY*

- Leading office hours and labs to help 10+ students at a time debug their code (OCaml) and refine course material.
- Mentoring 2 groups of 3-4 students as they complete a cumulative final project for the course.
- Grading projects and exams and answering 100+ questions on EdStem about projects and course content.

## PROJECTS

### LambdaScript - Custom Programming Language | OCaml, LaTeX, OUnit

- Implemented built-in data types: Int, Float, Bool, String, Tuple, List, etc.
- Implemented pattern matching, lambdas, currying, conditionals, let expressions, recursive definitions, etc.
- Implemented an elegant type system with parametric polymorphism, custom ADTs, and type-level arithmetic.
- Created a linear-time type-inference algorithm that generates the type of any expression and the kind of any type.
- Created a test suite utilizing functors for code reuse with 13,000+ unit tests to verify correctness.

### AlgoSandbox - Algorithm Visualizer | React.js, TypeScript, SASS, Vite

- Features 10+ popular algorithms and data structures: merge sort, insertion sort, stack, queue, etc.
- Interactive pages detailing the time complexity, space complexity, and implementations of the algorithms.
- Animated sandboxes utilize animations to demonstrate how algorithms unfold in real time.
- Elegantly designed home page features a tag-based search engine for easy navigation.

### HabitStack - Habit Tracking Application | React.js, TypeScript, JavaScript, SASS, Express.js, Firebase, Vite

- Interactive calendar for tracking daily tasks coupled with dashboard widgets that display user information.
- Users can create personalized plans for maintaining healthy habits and breaking bad ones.
- Chat functionality between users and secure authentication using Firebase and Express.js.
- A page with essential habit-changing knowledge I've discovered from reading personal development books.

### CritterWorld - Evolving Artificial Life Simulator | Java, JavaFX, SceneBuilder, Gradle, JUnit

- Parser and Interpreter for a programming language that controls the critters.
- Graphical user interface that shows how the critters move around the map and interact.
- Fault injector that creates 6 types of modifications in critter programs, which models genetic mutations.
- Test suite using JUnit to ensure the correctness of the application.

## TECHNICAL SKILLS

**Languages:** Python, Java, JavaScript, TypeScript, C/C++, OCaml, Haskell, RISC-V Assembly

**Frontend:** React.js, JavaScript, TypeScript, HTML/CSS, SASS, TailwindCSS, JSP, Electron.js

**Backend:** Express.js, Flask, Firebase, MySQL

**Other:** PyTorch, LaTeX, JavaFX, Data Structures and Algorithms, Git, Russian

## APPLICABLE COURSES

Analysis of Algorithms, Honors Object Oriented Programming and Data Structures, Systems Organization and Programming, Data Structures and Functional Programming, Discrete Structures, Linear Algebra, Multivariable Calculus, Introductory Macroeconomics