Yuchen Jiang

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Education

- **University of Michigan** — Ann Arbor, Michigan
  Bachelor of Computer Science; GPA: 3.8 — *Sep 2021 - Current*
  Courses: Operating Systems, Programming Languages, Programming Paradigms, Data Structures and Algorithms, Foundations of Computer Science.
- **Shanghai Jiao Tong University** — Shanghai, China
  Bachelor of Electrical and Computer Engineering; Major GPA: 3.6 — *Sep 2019 - Current*
  Straight A/A+s in all computer science related courses.

Skills Summary

- **Languages**: Rust, OCaml, Elm, Typescript, Python, C#, Modern C++, Html & SASS
- **Tools**: Git, Docker, Latex, PyTorch, Unity, JIRA

Researches & Experiences

- **Zydeco Project** — University of Michigan
  Student Researcher - Prof. Max S. New — *Sep 2022 - Current*
  - **Implementation of Zydeco Programming Language**:
    Based on call-by-push-value calculus, Zydeco's stack-based computation model offers codata, a type designed to operate on the stack directly. The main goal of Zydeco is to type-check the stack and give a desirable intermediate representation and compilation target. In two months, we've supported monomorphic data type and codata type and completed the evaluator in CEK-machine style and the parser in LALRPOP.
- **Microsoft Starmada Team** — Microsoft Research and University of Michigan
  Student Researcher - Prof. Jay Norch and Prof. Manos Kapritsos — *Sep 2021 - Current*
  - **Diff algorithm for Starmada Code Refactor**:
    To perform refactor on similar code of Starmada, the formal verification language, a diff algorithm that is syntax aware and semantically safe is needed. The diff algorithm introduces a novel solution for code refactor that enforces syntactic correctness by construction and takes the programmer's intention into account.
  - **VSCode Extension for Starmada Multi-Level Editor**:
    Worked on building a multi-level editor for Starmada, a formal verification language with multiple refinement levels that translates the implementation to the specification of the target program. To help the programmer refactor the similar levels with ease, a multi-level editor is built based on VSCode to perform the refactor in a quick and neat way.
- **Future of Programming Lab** — University of Michigan
  Student Researcher - Prof. Cyrus Omar — *Dec 2021 - Current*
  - **Parametric Polymorphism**:
    Introducing parametricity to Hazel and exploring polymorphic gradual typing. Hazel is a live programming environment that features structural editing and providing user friendly feedbacks as the programmer type.
- **Elf Team** — Shanghai, China
  Developer and Student Researcher — *2021 Apr - 2021 Dec*
  - **Elf, An Elm Code Quality Checker**:
    Designed and implemented the code quality checker for Elm. Elf is an Elm code quality checker that peeks through the repository and look for discouraged usages and duplicate code pieces.

Personal Projects

- **Charcoal - A Commandline Dictionary**:
  Written in Rust, Charcoal uses asynchronous web requests and SQLite to serve the purpose of "rewriting small CLI tools in Rust, a system level programming language". Besides the joke and the technical adventure, Charcoal is basically just an easy-to-use dictionary with fancy display.
- **Flow.er - A Web Notebook App**:
  Also written in Rust, flow.er uses Yew to write user interface in the web browser and builds the server with Rust (again) on native machine. It's a todo app, a mind map and a notebook app at the same time.
- **Duality - Web Game**:
  Written in Elm, Duality is a breakout style game that tells a love story.

Honors and Awards

- Triple-A Student of Year 2020 at SJTU.
- JI Student Academic Award at SJTU, 2019 - 2020.