Elijah Cantu

elijahcantu.com | caelijah@umich.edu | linkedin.com/in/elijahcantu | github.com/elijahcantu

EDUCATION

University of Michigan College of Engineering — Ann Arbor, MI
- **BSE:** Computer Science — Expected: May 2025
- **Minor:** User Experience Design
- **Awards:** Full-ride scholarship, Detroit Promise full-tuition scholarship, Wolverine Pathways full-tuition scholarship
- **Relevant Coursework:** Web Systems, (Web Design, Development, and Accessibility), Database Management Systems, Building Data-Driven Web Applications, Human-Centered Software Design and Development, Software Engineering

SKILLS

Programming, Scripting, Markup Languages: HTML, CSS, JavaScript, SQL, SQL*Plus, Java, C++, C#, C, Python, Shell, Assembly
Web Frameworks and Tools: AWS, Cloudflare, React, Node, npm, npx, webpack, NGINX, Flask, Django, jQuery, Cypress
Database Tools: PostgreSQL, MySQL, SQLite, Oracle
Other: G++, GCC, GDB, Clang, LLDB, pdb, pytest, eslint, venv, pip, Homebrew, Make

PROJECTS (For a complete list of 40+ projects, visit linkedin.com/in/elijahcantu/details/projects)

Wikipedia Search Engine
- Developed a scalable search engine for Wikipedia pages crawled from Michigan and technology related seed pages.
- Built an inverted index using a pipeline of MapReduce programs compatible with the Hadoop Streaming Interface.
- Created an index server as a REST API app that returns search results based on TF-IDF and PageRank weight.
- Implemented a search server as a user interface implemented with server-side dynamic pages.
- Created a Flask view for the index route using parallel threads to make REST API requests to each index server.
- Designed an HTML template using jinja2 for the search engine to render the search bar, PageRank weight slider, and results.

Social Media Web Application
- Developed and deployed a social media web app on AWS, utilizing both client and server-side dynamic web pages in Python.
- Integrated a Flask REST API for the routes: GET: posts (with pagination parameters); POST/DELETE: like, comment.
- Created a client app in React that makes AJAX calls to fetch data from the REST API and conditionally render the users' feeds.
- Implemented infinite scroll, double-click to like, liking, and commenting without page refresh for the users' feeds.
- Developed Flask views for the following routes, implementing server-side dynamic web pages:
  - GET: upload, user, followers, following, post, explore, account(login, create, delete, edit, password, auth)
  - POST: like, comment, post, follow, logout, account(login, create, delete, edit, update password)

Templated Static Site Generator
- Developed a Python program using jinja2 that renders and outputs a static website using HTML templates, JSON data, CSS, JPGs, and PNGs.
- Designed HTML templates using jinja2 for the web pages: index, user, followers, following, post, and explore.
- Built a non-interactive social media platform using my static site generator, HTML templates, JSON data, etc.

MapReduce Server
- Developed a robust single machine, multi-process, multi-threaded server that executes user-submitted MapReduce jobs in Python and deployed it on a cluster of AWS EC2 instances.
- Integrated multithreading for executing user and manager submitted jobs and tasks, managed message passing via TCP ports for communication between users, managers, and workers, handled heartbeats using UDP ports between managers and workers, and ensured fault tolerance by handling dead workers.
- Implemented map and reduce stages including partitioning input by the manager for map tasks, execution of map executables by workers, partitioning and sorting of executable outputs, creation of reducer tasks by the manager, and merging of input files by workers using a heap queue, and execution of reduce executable.

EXPERIENCE

Adient Plymouth CTU Technical Center — Plymouth, MI
- **Honda Department:** Product Engineer Intern — August 2019 - March 2020
- **RECARO Department:** Business Analyst Intern — August 2018 - June 2019

Jewish Vocational Service — Detroit, MI
- Disabled Adult Support Worker Intern — October 2017 - June 2018

EXTRACURRICULAR

FIRST Robotics Competition Team 5577 — Detroit, Michigan
- Team Captain, Mechanical Lead, and Mechanical Engineer — Sept 2017 - June 2021