Jacob Chvatal

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EDUCATION

NORTHEASTERN UNIVERSITY

B.S. in Computer Science
Expected May 2022 | Boston, MA
Khoury College of Computer Sciences
Dean's List (Fall 2018, Spring 2019)
GPA: 3.53 / 4.0

LINKS

GitHub:// **jakeisnt**
LinkedIn:// **jacob-chvatal**
Twitter:// **@jakeissnt**
Website:// **jacob.chvatal.com**

COURSEWORK

Networks
Computer Systems
Artificial Intelligence
Theory of Computation
Compilers
Programming Languages
Computer-Aided Reasoning
Fundamentals of CS 1 (TAx3)
Fundamentals of CS 2 (TAx1)
Algorithms
Research

SKILLS

WEB

- JavaScript/TypeScript
- React/NextJS, Webpack, Bundling
- Clojure/ClojureScript

INFRASTRUCTURE

- Linux: Debian+, Arch+, NixOS
- Shell (bash, zsh), Nix flakes
- Docker, Docker-Compose, Kubernetes

RESEARCH

Interests: Programming language development, teaching, agency in computing, formal verification

- Lisp: Racket, ACL2/s
- ML: OCaml, Coq, Rust, Haskell

EXPERIENCE

SKIRA TECH | Software Engineering Intern

August 2020 – December 2020 | Stockholm, Sweden

- Developed a marketplace to transform the Swedish grain industry with GraphQL, Sequelize, PostgreSQL, React/Redux.
- Spearheaded and executed significant contributions to the product, reworking the central user interface and enhancing application performance.

INTEL CORPORATION | Software Engineering Intern

May 2020 – August 2020 | Hillsboro, OR

- Designed and developed a multimodal data management service for the Edge Insights video analytics system with Python, Protobuf and Docker (+compose).
- Interfaced with VDMS graph database; containerized and hosted.

CDK GLOBAL | Software Development Intern

June 2018 – Aug 2018 | Portland, OR

- Led development of React & Spring Boot web app w/ Material UI components
- Utilized Docker and nginx to containerize and host application through CDK

PORTLAND STATE UNIVERSITY | Student Intern

June 2017 – Aug 2017 | Portland, OR

- Impl. C++ library to compress and apply linear algebra to sparse matrix data
- Applied matrix operations to analyze and graph large 3D mesh structures
- Distr.' code to COEUS supercluster w/ OpenMP parallel programming pragmas

RESEARCH

NU SANDBOX | Developer and Project Lead

May 2019 – August 2021 | Boston, MA

- Reworked A-Eye, a website used by a course at NEU to teach ML/AI
- Managed team for a CV app to analyze ELISA vials for chem.' experiments
- Used Python's Kivy framework, Android's JDK and OpenCV
- Founded GraduateNU, a schedule planning system for NEU students

PROJECTS

FUNCTIONAL COMPILER OCaml

Developed a compiler targeting x86 Assembly for a functional language with type checking, inference, garbage collection, and I/O for a capstone course.

WEB INFRASTRUCTURE Ongoing

Designing a distributed system and corresponding design language, leveraging NixOS, Org-mode, and various life-tracking tools to maintain a peronal search engine, wiki, and analytics API, leveraging Rust, Clojure, NextJS, CI, and NixOps.

SYSTEM CONFIGURATION NixOS

Developed a completely reproducible NixOS configuration EDSL with innovative technologies like Wayland and Pipewire. Configured self-hosted server infrastructure. Enabled practically instant reinstallation and redeployment.

COURSEWORK / PROJECTS Northeastern

A responsive shell and FUSE-based file system in C, interpreters for many toy languages in Haskell, a substantial compiler for a typed functional programming language in OCaml and much more.
Code for these projects is available upon request as per Northeastern policy.