

# Jake Chvatal

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## EDUCATION

### NORTHEASTERN UNIVERSITY

#### B.S. IN COMPUTER SCIENCE

Expected Dec. 2022 | Boston, MA  
 Khoury College of Computer Sciences  
 GPA: 3.53 / 4.0

## 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

### INTERPERSONAL

- UI accessibility standards proficient
- CI organization and infrastructure
- AGILE project management and leadership

### RESEARCH

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

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

## EXPERIENCE

### THE ROUTING COMPANY | SOFTWARE ENGINEERING INTERN

January 2022 – August 2022 | Cambridge, MA

- Developed interface and infrastructure for on-demand vehicle routing platform as an equal contributor on a two-person team with Go, TypeScript, GCP, Docker.
- Implemented and integrated an interface for interactive vehicle simulations.

### 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 major product initiatives, 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 personal 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 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.