

# 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: 3.525 / 4.0

## LINKS

GitHub:// [jakeisnt](#)  
LinkedIn:// [jacob-chvatal](#)  
Twitter:// [@jakeisnt](#)  
Website:// [jacob.chvatal.com](#)

## COURSEWORK

### GRADUATE

Algorithms

### UNDERGRADUATE

Artificial Intelligence  
Computer Systems  
Theory of Computation  
Object-Oriented Design  
Programming Languages  
Compilers  
Discrete Mathematics  
Linear Algebra  
Fundamentals of CS 1 (TA)  
Fundamentals of CS 2 (TA)  
Research

## SKILLS

### PROGRAMMING

Over 5000 lines:

Java • Shell • JavaScript • Haskell  
OCaml • Python • HTML/CSS

Over 1000 lines:

TypeScript • C • C++ • SQL • Assembly  
Familiar:

Android • Coq • ACL2 •  $\LaTeX$

### TECHNOLOGIES

Experienced:

Linux and Nix(OS) • Docker • React • PostgreSQL

Familiar:

Plan9 • SQLite/MySQL • Angular

## EXPERIENCE

### SKIRA TECH | SOFTWARE ENGINEERING INTERN

August 2020 – December 2020 | Stockholm, Sweden

- Developing 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 – Present | 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
- Worked on an Android app to fetch accel. and activity data for a psych lab

## 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.

### POO-NU HackHarvard

Assembled React Native application with Google Maps API, GraphQL and MySQL to help students find Northeastern campus bathrooms.

### SYSTEM CONFIGURATION NixOS

Developed a completely reproducible NixOS configuration EDSL with innovative technologies like Wayland and Pipewire. Designed UI, configured self-hosted email and web servers. Enabled practically instant reinstallation and redeployment.

### COURSEWORK / PROJECTS Northeastern

Games in ISL/Java, a shell and FUSE-based file system in C, a quiz sharing application with Python's Flask and SQL, interpreters for many toy languages in Haskell, and a substantial compiler for a typed functional programming language in OCaml.  
*Code for these projects is available upon request as per Northeastern policy.*