Ashvin Ranjan

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Education

University of Washington | Expected June 2027 **GPA: 3.98/4.0**

Bachelor of Science in Computer Science, Minor in Linguistics

- Completed: Introduction to Computer Programming I, II, & III, Hardware/Software Interface, Foundations of Computing I, Data Structures & Algorithms, Software Design & Implementation, Shallow Processing Techniques for NLP (Master's course), Introduction to Linguistics.
- Complete by June 2026: Foundations of Computing II, Advanced Statistical Methods in NLP (Master's course), Systems Programming, Operating Systems.
- Accolades: Dean's List 2024 - 2025, Fall 2025.

Research Experience

CLMBR | Prof. Steinert-Threlkeld's Computational Linguistics research lab.

Undergraduate Researcher *November 2024 - Present*

- First author on research using a custom numpy and pandas-based python library to analyze Information Bottleneck systems.
- Leading research on regular expression matching at terabyte scale utilizing custom CUDA GPU kernels and algorithms.
- Worked on pretraining and fine-tuning for various Hugging Face transformers across a range of languages and forms of data.
- Working on the Unnatural Language ToolKit in Python, an open-source library for modeling and analysis in semantic typology.

Publications

Preprints

Ashvin Ranjan & Shane Steinert-Threlkeld. (2026). When Efficient Communication Explains Convexity. *arXiv*. https://arxiv.org/pdf/2602.02821

Professional Experience

Snap Inc. |A company focused on social media and AR technology.

Spectacles Accelerator Invitee *February 2025 - September 20205*

- Successfully proposed a widget-based home productivity application for the Snapchat Spectacles which was approved for funding.
- Collaborated with a team of developers to create the application, specifically focusing on developing the backend and UI.

Inspirogram | A Computer Science education non-profit.

Software Engineering Intern *May 2022 - January 2023*

- Volunteered to help develop the website and write courses for the non-profit, which would be used to teach students in Tanzania.
- Utilized Next.js to help develop the website. Wrote courses on Unity and React.js software development and made presentations.

Outreach | A marketing and outreach company.

Software Engineering Intern *July 2022 - August 2022*

- Developed a backend and command line interface with Go to help developers create GitHub repositories with custom templates.
- Translated Ruby code into Go and created a custom YAML specification to allow for the creation of custom repository templates.

Software Engineering Intern *June 2021 - August 2021*

- Collaborated with the calendaring experiences team in order to solve bugs in the calendar of the Next.js-based company website.
- Created outline for additional sections of the company website involving image processing and uploading by users using Next.js.

Backbone | A mobile gaming peripherals company.

Software Engineering Intern *March 2020 - August 2020*

- Created an iOS application with Swift to send live stream data to a computer via USB to an OBS plugin for recording or streams.

Projects

Keitairon | github.com/Ashvin-Ranjan/keitairon *June 2023 - August 2023*

- Researched and created a Finite State Transducer to analyze the morphology of Japanese verbs to enable better sentence parsing.

- Met a professor in Japanese Computational Linguistics to better structure the program and documented the process on my blog.

Disadus | github.com/disadus *August 2021 - April 2022*

- Produced a learning management system with other students reaching over 300 registered users and over 10 student communities.
- Architected and developed the Next.js website and Typescript backend which integrated MongoDB, Node Mailer, and Firebase.

Skyblock Tools | github.com/skyblock-tools *July 2021 - September 2022*

- Collaborated with an international team of seven developers to create a Minecraft modification with web and Discord integration.
- Reduced server processing time by 50% by refactoring Python-based backend code into Rust.
- Reached over 3,000 active users by the end of the project lifespan with over 60 users paying.

N | github.com/nbuilding/N-lang *December 2020 - September 2022*

- Published documentation for the strictly-typed programming language that involved features such as generics, currying, and async.
- Developed an interpreted branch with Python and a transpiled to Javascript branch in Typescript in a team with other developers.

Skills

Programming Languages: Typescript, Javascript, Python, Rust, Go, Java, C#
Frameworks: Node.js (Advanced), LaTeX (Proficient), Hugging Face (Intermediate), PyTorch (Beginner)
Natural Languages: English (Native), Japanese (Upper-Intermediate, JLPT N2 Certification)