Yuchen Xin

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Education

University of Washington, Allen School of Computer Science Expected June 2027
Triple Major: B.S. Computer Science, B.S. Mathematics, and B.S. Physics GPA: 3.95/4.00
Relevant Coursework: Natural Language Processing, Machine Learning, Algorithms, OS, Linear Algebra, Probability & Statistics, Differential Equations, Real Analysis, Complex Analysis, Electricity and Magnetism, Quantum Mechanics

Work Experiences

Amazon Jun 2025 – Present
Software Development Engineer (SDE) Intern *Sunnyvale, CA*

- Developed a package validation library in **Rust** for OS-related software run on 200 million Amazon devices.
- Extended OS inter-process communication functionality in **C++** by introducing interface handle and file descriptor passing support and implemented direct response channels for transactions.

Quantum Probability | **Washington Experimental Mathematics Lab** Apr 2025 – June 2025
Quantum Physics Researcher *Seattle, WA*

- Proved probabilistic convergence to the Born rule in flea-perturbed *n*-well quantum systems using arbitrary functions.
- Presented research at the 2025 spring poster session by the University of Washington, Department of Mathematics.

PIONEER Pion Decay Experiment | **Paul Scherrer Institute Muon Physics** Jul 2022 – Jun 2023
Computational Physics Researcher *Seattle, WA*

- Applied GPU photon ray tracing using **NVIDIA CUDA** to optimize a particle simulation, causing a 10x speedup.
- Wrote **C++** and **Bash** scripts and used **NumPy** for scientific visualization, data analysis, and machine learning.
- Presented research to Professor David W. Hertzog and collaborated with physics PhD students.

Projects

Spotlite Nov 2021 – Jun 2023
Co-Founder & Full Stack Developer *Bellevue, WA*

- Led a team of 4 to create a real-time classroom quizzing platform using **React.js**, **Express.js**, and **socket.io**.
- Launched in multiple high schools and won 3rd place at the national Technology Student Association conference against teams from 30+ states.

NASA Student Launch Challenge Sep 2022 – Apr 2023
Model Rocket Engineer *Bellevue, WA*

- Built a rocket with automatic mechanical landing legs over 6 months in a team of 9, and launched to 4,000+ ft.
- Presented technical designs to NASA Student Launch and qualified for nationals, outperforming 600+ teams.

Other Projects

- **Overstand**: a digital library app with an LLM reader assistant using **Claude AI** via **AWS Bedrock** and **Firebase**.
- **Fluid Simulations**: smoothed-particle hydrodynamics and quadtree-optimized Eulerian fluid simulations in **Java**.

Awards and Achievements

Honors Advanced Calculus Award (Merit Scholarship) | *Year-long top student among 45 total* May 2025

Winner **at DubHacks '23** | *1st Place in Synergy Track among 500+ competitors* Oct 2023
Led a team of 3 to build an innovative real-time 2D music creation app using **React.js**, **Express.js**, and **socket.io**.

1st Place **at Washington state PTA game development competition** | *100+ competitors* May 2020
Built an isometric tile-based city-building game about sustainability and fighting natural disasters in **Unity** using **C#**.

2 gold, 1 silver: President's Volunteer Service Award 2017, 2018, 2019

Technical Skills

Areas: Machine Learning, Full-Stack Software Development, Game Development, Scientific Computing
Languages: Rust, C++, C, C#, Python, Java, JavaScript, Typescript, SQL, GLSL, Bash
Software Tools: Git, React.js, React Native, Express.js, Socket.io, AWS, MongoDB, CUDA, Geant4, Vercel, Unity
ML/AI/Data Analysis: PyTorch, NumPy, Pandas, Matplotlib, Hugging Face, Mathematica