

# Isaac Salzman

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## EDUCATION

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**Sonoma State University** September 2022 – May 2026  
*B.S. Computer Science (3.92) and B.A. Mathematics (3.97).* Rohnert Park, CA

**Niigata University** September 2024 – August 2025  
*Intensive year-long Japanese language study abroad.* Niigata, Japan

## EXPERIENCE

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**Undergraduate Data Analyst** June – August 2023, May – September 2024  
*University of California, San Francisco* San Francisco, CA

- Developed a transformer-based model to automatically annotate prostate cell types from multimodal single-cell and spatial omics data.
- Applied non-negative matrix factorization to identify neuroendocrine patterns in prostate cancer samples from the RESPOND cohort of African American men.

**Computer Science and Mathematics Tutor** April 2023 – September 2024  
*Sonoma State University* Rohnert Park, CA

- Led lab and classroom sections for Computer Science courses, providing real-time debugging and guidance.
- Debugged student code in Python and C++ emphasizing systematic problem-solving and best practices.
- Designed programming projects to reinforce core concepts such as data structures, algorithms, and problem decomposition.

## PROJECTS

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**Shorelark Expanded** | *Rust, JavaScript, HTML/CSS* August 2025 – Present

- Extended a Rust/WebAssembly evolution simulation for the browser with predator-prey co-evolution dynamics.
- Implemented feed-forward neural networks and core genetic algorithm operators from scratch in Rust.
- Integrated a Rust simulation engine with a JavaScript frontend for real-time visualization and control.
- Built a reproducible batch experiment pipeline (e.g., 500 runs × 300 generations), logging per-generation metrics to CSV and summarizing learning/convergence with mean, 95% CI, and across-run variance.

**PCformer** | *Python/PyTorch, Jupyter Notebook, Bash* May – September 2024

- Implemented a transformer-based pipeline in Python for cell type classification across multimodal single-cell and spatial omics datasets.
- Extended a foundation transformer model pre-trained on over 500K cells for downstream supervised classification tasks.
- Developed and maintained training, fine-tuning, and inference scripts using PyTorch, supporting configurable model sizes and datasets.
- Automated end-to-end experiments with Bash job scripts, enabling reproducible runs on remote GPU instances.

**Additional Projects**

- Advent of Code; Othello AI; Dutch National Flag benchmarking (C/Rust); DailyProgrammer.

## PUBLICATIONS & PRESENTATIONS

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**A single-cell and spatial atlas of prostate cancer reveals the combinatorial gene programs defining lineage plasticity and metastasis** Manuscript submitted  
Hanbing Song *et al.* (incl. **Isaac Salzman**).

**A gene program association study (GPAS) in prostate cancer reveals novel gene modules associated with plasticity and metastasis** April 2025  
Hanbing Song *et al.* (incl. **Isaac Salzman**). Poster presentation, *AACR Annual Meeting 2025. Cancer Research*, AACR Abstract 7506. [doi:10.1158/1538-7445.AM2025-7506](https://doi.org/10.1158/1538-7445.AM2025-7506).

## TECHNICAL SKILLS

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**Languages:** Rust, Python, C/C++, CUDA, HTML/CSS, Bash  
**Libraries:** pandas, NumPy, PyTorch, Matplotlib, Pillow  
**Tools:** Linux, Git, Vim/Neovim, tmux, Jupyter