Amr Salem

Computational Biologist

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Education

M.S. Biostatistics, Case Western Reserve University *Dec 2024 - Dec 2025*
GPA: 4.0
Relevant Coursework: Bioinformatics, Genetic Epidemiology , Design & Sequencing Studies, Statistical Methods, Machine Learning & Data Mining

B.S. Applied Mathematics, Case Western Reserve University *Jan 2022 – Dec 2024*
Relevant Coursework: Data Structures, Java Programming, AI, Numerical Analysis, Linear Algebra, Data Science Systems, Mathematical Modeling

Experience

Bioinformatics Analyst , Dana-Farber Cancer Institute / Harvard Medical School *May 2025 – Aug 2025*
Boston, MA

- Completed a **summer research internship** at the **Gillani Lab**, focusing on pediatric cancer genomics.
- Developed **scalable genomic pipelines** for analyzing germline **whole-genome sequencing (WGS)** data in pediatric cancers, enabling **precision oncology** efforts in Ewing sarcoma.
- Led the design of an **end-to-end variant interpretation platform**, integrating annotation, visualization, and prioritization modules to support downstream biological insight.
- Applied **pathway enrichment** analysis and unsupervised methods (PCA, clustering) to identify **molecular patterns of disease risk** across diverse patient cohorts.
- Conducted **runs of homozygosity (ROH)** and genomic burden analyses to uncover **heritable susceptibility signatures** in cancer-prone individuals.
- Collaborated in a **cross-functional team** of clinicians and computational biologists to deliver **clinically relevant, data-driven insights**.

Bioinformatics Researcher, University Hospitals Cleveland Medical Center *Nov 2022 – Present*
Cleveland, OH

- Developed **deep learning models** (CNNs) for **genetic risk prediction**, integrating GWAS-derived SNPs into interpretable frameworks using SHAP and AUC benchmarking.
- Built **automated pipelines** for PRS computation and genotype QC, contributing to **reproducible analytics workflows** in complex trait genomics.
- Conducted **real-world evidence analysis** by linking EHR and genomic data, identifying **clinical risk factors** for nephrolithiasis using integrated biostatistical models.
- Designed and deployed a **user-facing R Shiny dashboard** to visualize PRS distributions, variant-level effects, and **pathway-level burden**, supporting clinician interpretation.
- Contributed to research bridging **computational biology and clinical decision-making** in nephrology and complex disease contexts.

Leadership & Service

- **Co-Founder**, Student Advocacy Group *May 2023 – May 2024*
  Co-founded confidential peer support hotline; trained 40+ volunteers.
- **Vice President**, CWRU Student Government *Aug 2022 – Aug 2023*
  Led campus-wide DEI initiatives; represented students to university leadership.

Technical Skills

Data Analysis & Genomics: Regression, risk prediction, survival models, eQTL analysis, single-cell RNA-seq, GWAS, PRS
Tools & Pipelines: PLINK, Hail, BEDTools, BCFtools, VCFtools, GATK, Snakemake, Nextflow, R Shiny, Bash, HPC environments
Programming & ML: Python, R, SQL, Shell, (basic Java), TensorFlow, PyTorch, scikit-learn (classification, clustering, tuning)
Visualization & Collaboration: ggplot2, Seaborn, Plotly, Tableau, Git, Docker, Conda, Linux, scientific writing, presentations