Grant Merrigan

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SUMMARY

Software engineer with hands-on research experience building scalable bioinformatics platforms and machine learning models on genomic data. Combines full-stack development (ASP.NET Core, React, AWS) with computational biology research spanning large-scale RNA-seq, single-cell analysis, and evolutionary genomics. Seeking a role at the intersection of software engineering and life sciences.

EXPERIENCE

Graduate Researcher — Kulathinal Lab of Evolutionary Genomics & Bioinformatics

Dec 2025 – Present

Temple University, Philadelphia, PA

- Develop computational pipelines to analyze functional divergence of duplicated genes across primate and *Drosophila* species using large-scale RNA-seq datasets.
- Design and improve reproducible bioinformatics workflows and research software supporting comparative evolutionary analysis.

Software Development Intern

May–Aug 2023 & May–Aug 2024

Radwell International — Willingboro, NJ

- Built and enhanced internal enterprise applications for item imports, product advertising, and accounting report generation using **C#, .NET Framework,** and **Microsoft SQL Server**.
- Managed end-to-end data collection, cleaning, and warehousing pipelines ensuring accurate ingestion, transformation, and storage of large-scale enterprise datasets.

IT Automation Intern

May–Aug 2022

U.S. District Court, District of New Jersey — Trenton, NJ

- Automated repetitive court workflows using **Visual Basic** macros, reducing manual processing time for the IT department.
- Managed IT equipment lifecycle including setup, maintenance, and secure disposal to support day-to-day operations.

PROJECTS

PhyloDIVaS — Full-Stack Bioinformatics Web Platform

phylodivas.org

IS&T; Senior Capstone | ASP.NET Core, React, AWS, OrthoFinder, MAFFT, HyPhy-BUSTED, NCBI APIs

- Architected backend services in **ASP.NET Core** integrating NCBI genomic APIs and orchestrating a multi-tool bioinformatics pipeline (OrthoFinder, MAFFT, HyPhy-BUSTED) for automated ortholog analysis and dN/dS selection calculations at scale.
- Designed **REST APIs** and async job workflows supporting long-running computational tasks with structured scientific outputs, deployed on **AWS**.
- Built a **React** frontend with gene search, interactive phylogenetic visualizations, and downloadable FASTA results; delivered in an Agile team as a production-ready research tool.

Graph-Based ML Model for Immunotherapy Response Prediction (scRNA-seq)

Predictive Modeling in Biomedicine | Python, Scanpy, scikit-learn, PCA/UMAP, infercnvpy

- Developed a **graph-based machine learning** model to quantify tumor microenvironment heterogeneity and predict immunotherapy response across multi-cancer single-cell RNA-seq datasets.
- Processed large-scale scRNA-seq data through dimensionality reduction (PCA/UMAP), feature engineering, and patient-level aggregation pipelines for outcome prediction.
- Evaluated model performance with **ROC-AUC** and statistical hypothesis testing to assess predictive signal and robustness across cancer types.

Travel Planner — Full-Stack Travel Planning Web Application

cis-iis2.temple.edu/.../TermProject

Personal Project | ASP.NET Core, React, MSSQL Server, Ticketmaster API, REST APIs

- Built an end-to-end travel planning platform (flights, hotels, car rentals, events) with full account management, trip building, and third-party API integrations (Ticketmaster, Amadeus).
- Designed a normalized **MSSQL Server** schema and RESTful backend in **ASP.NET Core**; developed a responsive **React** frontend with live search and booking workflows.

EDUCATION

PSM Bioinformatics & Biological Data Science — Temple University Expected May 2027

Philadelphia, PA | Part-time evening program

B.S. Information Science & Technology — Temple University Dec 2025

Philadelphia, PA | Diamond Scholarship Recipient

Relevant Coursework: Data Structures & Algorithms, Computer Networking & Security, Database Management Systems, Web Development, Component-Based Software Design, Discrete Mathematics

TECHNICAL SKILLS

Languages:	Python, C#, SQL, JavaScript, Java, C, Visual Basic
Bioinformatics:	Scanpy, infercnvpy, Seurat, Bioconductor, OrthoFinder, MAFFT, HyPhy, Galaxy, NCBI E-utilities; RNA-seq & scRNA-seq (FASTA, FASTQ, H5AD, AnnData)
ML & Data Science:	scikit-learn, graph-based ML, PCA/UMAP, ROC-AUC, predictive modeling, classification/regression, NumPy, Pandas
Full-Stack & Cloud:	ASP.NET Core, React, REST APIs, AWS, MSSQL Server, Git/GitHub, Conda, Jupyter, Agile/Scrum