Dawson Trotman

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PROFILE

Computational Biologist & Data Analyst with 2+ years of experience in statistical modeling, Python development, and large-scale data analytics. Proven ability to engineer automated analytical pipelines and lead multi-stakeholder initiatives. Adept at synthesizing complex quantitative findings into actionable strategies for non-technical audiences

- **Core Programming:** Python (Pandas, NumPy, SciPy), SQL, Object-Oriented Programming (OOP), HTML, Git/GitHub, Linux (Bash), High-Performance Computing (HPC), R
- **Advanced Analytics & AI:** Statistical Modeling (Regression, Random/Greedy-Walker, Probability Landscapes, Lotka-Volterra, Wright-Fisher, Consumer-Resource), Predictive Simulation Modeling, Machine Learning, Data Science, GenAI & LLMs, A/B Testing, Experimental Design, Time-series analysis
- **Data Strategy & Visualization:** PowerBI, Business Intelligence, Data Pipeline Development, High-Throughput Data Processing, Data Quality Assurance, Storytelling with Data, Project Management, Advanced Excel

PROFESSIONAL EXPERIENCE

Abreu Lab (NYU CGSB)   New York, NY
Biologist & Lab Operations Lead   Nov 2024 – Present

- **Engineered an Object-Oriented Python pipeline** to automate time-series analysis (OD600), utilizing exponentially weighted moving averages (EWMA) and Gompertz model fitting to reduce 96% manual time and enhance predictive accuracy. Modular and lightweight design allows for constant adjustment and improvement
- **Designed and executed a multi-month longitudinal experiment,** tracking 1800+ unique genetic variants across multiple experimental conditions, implementing quality control measures, and analyzing the resulting 2+ terabytes of high-quality genomic data. Results inform antibiotic dosing and treatment protocols for fungal pathogens
- **Managed team of 4 researchers**, coordinating data collection protocols, standardizing analytical workflows, and ensuring deliverables met quality standards for high-visibility presentation at NYU SURP Symposium
- **Developed predictive simulation models** in Python/SciPy (including Lotka-Volterra and Wright-Fisher algorithms) to forecast ecological and evolutionary outcomes and to provide needed insight on future experimental strategy. Utilized stochastic modeling to predict antibiotic resistance patterns in multidrug-resistant pathogens, directly informing experimental strategy to reduce trial-and-error testing
- **Architected the foundational analytics infrastructure** for a new laboratory, selecting the computational tech stack and building reusable data frameworks to support a $1M+ research operation

University of Michigan   Ann Arbor, MI
Assistant Researcher - Data & Laboratory Analytics   May 2023 – Aug 2024

- **Led field operations on a multi-stakeholder partnership** between UM, USGS, and First Nations leadership; synthesized disparate datasets (environmental, geochemical, microbiological) to drive policy-relevant ecosystem insights. Operations and sampling covered all parts of Michigan, providing the first, robust, statewide dataset
- **Leveraged high-throughput sequencing and isotope geochemistry** to diagnose ecosystem constraints and optimize restoration protocols for Mnomen (*Zizania palustris*). Translated findings into a comprehensive thesis offering quantifiable guidelines for wetland sustainability. Thesis presented to faculty and researchers at UM
- **Presented complex technical findings** to non-technical stakeholders and scientific audiences at the 2024 Michigan Geophysical Union, translating data-heavy results into actionable and culturally relevant narratives

Student Life Sustainability at University of Michigan   Ann Arbor, MI
Sustainability Student Consultant   Sept 2022 – Aug 2024

- **Directed a cross-functional team of 10** to execute the annual Earth Day summit; managed vendor relationships (50+) and optimized logistics to increase attendee engagement
- **Conducted quantitative analysis** of institutional Greenhouse Gas (GHG) emissions, leveraging data to identify reduction opportunities aligned with federal funding opportunities (Bipartisan Infrastructure Bill)

EDUCATION

University of Michigan   Ann Arbor, MI
Bachelor of Science in Earth and Environmental Science (Computational Biology Focus)
Bachelor of Musical Arts in Classical Voice Performance

- James B. Angell Scholar | GPA: 3.95/4

ADDITIONAL

- Languages: French (Professional Working Proficiency)
- Interests: Piano, Saxophone, Singing, Music, Musical theatre, Performing arts, Literature, Art, Hiking, Writing
- Certification: HackerRank Advanced SQL, Data Camp (LLMs, GenAI, OpenAI, API, Data Science, ML)