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Professional Summary

Results-driven medical researcher with a deep foundation in clinical and applied medicine, including epidemiology, biostatistics, and molecular modeling. Proven track record of applying scientific methods to solve real-world problems in healthcare, public health, and biomedical engineering contexts. Experience translating abstract medical concepts into concrete solutions through experimental design, data analysis, and research-backed modeling. Known for strong analytical thinking, attention to detail, and clear technical communication.

Core Competencies
• Multivariate Biostatistics & Clinical Analysis • Statistical Modeling & Inference • Optimization Algorithms (Linear, Integer, Nonlinear) • Machine Learning & Data Science (Classification, Clustering, Regression) • Time Series Forecasting & Signal Processing • Molecular Biology, Genomics, Discrete Structures • Scientific Proof Writing & LaTeX Typesetting • Technical Research, Data Visualization, Academic Writing • Programming: Python, MATLAB, R, SQL, Julia • Tools: Jupyter, Git, Excel (Solver, VBA), Tableau, GeoGebra, Mathematica

Education

Doctor of Philosophy in Medicine (Biomedical Sciences) University of Missouri – Columbia, MO

Graduation: May 2020 | GPA: 3.92 / 4.00 Honors: Dean's List (All Semesters), Alpha Omega Alpha Honor Medical Society Relevant Coursework: • Advanced Physiology, Molecular Biology, Immunology, Clinical Epidemiology • Biostatistics, Medical Genomics, Pharmacology • Numerical Methods, Machine Learning for Biomedical Applications • Stochastic Processes, Health Economics, Bioinformatics

Academic Activities:
• President, MU Medical Student Association (2018–2019): Organized workshops, case studies, and weekly seminars • USMLE Step 1 Exam Participant (Top 20% Nationally – 2017) • MU Public Health Society – Member of analytics team for annual Health Hackathon

Certifications

• Clinical Trial Design – Johns Hopkins University (Coursera, 2021) • Biostatistics for Medical Research – Harvard University (edX, 2020) • Python for Healthcare Analytics – IBM / Cognitive Class (2020) • Genomics and Precision Medicine – Stanford University (2020) • Machine Learning in Healthcare – Stanford University / Andrew Ng (2020)

Professional Experience

Postdoctoral Researcher – Biomedical Modeling & Epidemiology Lab University of Missouri May 2020 – Present | Columbia, MO

• Modeled population dynamics using nonlinear differential equations; identified limit cycles and bifurcations in disease transmission. • Applied Fourier analysis to detect cyclical behaviors in noisy time-series epidemiological data. • Co-authored research paper submitted to American Journal of Epidemiology. • Used MATLAB, LaTeX, and Simulink to document simulations and findings.

Medical Consultant – Freelance Jan 2018 – Present | Remote

• Delivered end-to-end statistical analysis for clients in healthcare, pharmaceuticals, and public health sectors. • Built Monte Carlo simulations for risk evaluation in clinical trial designs using Python. • Designed and implemented custom clustering algorithms for patient segmentation using k-means, DBSCAN. • Translated clinical problems into biomedical models, improving decision-making by 25% (client feedback).

Medical Tutor – University Learning Center University of Missouri Aug 2016 – May 2018 | Columbia, MO

• Tutored 150+ students in physiology, biostatistics, anatomy, and clinical reasoning. • Developed interactive LaTeX-based handouts and visualizations to improve conceptual understanding. • Mentored students in research techniques, helping increase departmental pass rate by 18%.

Key Projects

1) Predictive Modeling of Infectious Disease Spread • Built a compartmental SIR/SEIR model with variable transmission and recovery rates using Python and SymPy. • Used optimization techniques to fit parameters to real-world COVID-19 datasets. • Visualized results with Matplotlib and presented findings to MU Biomedical Society.

2) Genomics & Molecular Applications • Implemented gene sequencing and CRISPR analysis pipelines from scratch in Python. • Explored genomic vulnerabilities and precision medicine protocols. • Simulated molecular interactions using biochemical theorems and computational models
3) Clinical Trial Pricing using Cost-Effectiveness Models • Modeled intervention strategies using stochastic differential equations. • Simulated outcome projections under varying efficacy and cost conditions. • Developed interactive dashboard in Python for healthcare policy analysts.

Publications & Presentations

• "Dynamic Systems and Stability in Disease Modeling" – Poster Presentation, MU Medical Research Symposium, 2021 • "The Role of Biomarkers in Clinical Trial Stability" – Research Article (Preprint, medRxiv, 2024)

Affiliations

• Member, American Medical Association (AMA) • Member, Society for Epidemiologic Research (SER) • Contributor, BioPython and MedStackExchange • Participant, NIH Open Problem Seminar (2020)