Diego Coronado

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sudoneoox · diegocoronado0

Education

University of Houston, *GPA: 3.8* Houston, TX
B.S. Computer Science, Focus: Software Development *2023 - 2026*
B.S. Mathematics, Focus: Data Science *2024 - 2026*

Experience

Tutor Fellowship Jan 2025 – Apr 2025
Ignite Teach For America *Remote*

- Provided virtual one-on-one tutoring to underserved students, helping accelerate their academic progress and foster educational equity
- Participated in comprehensive professional development sessions to enhance tutoring effectiveness and student engagement strategies
- Collaborated with Ignite Site Leaders and fellow tutors to implement personalized learning approaches and track student progress
- Engaged in regular feedback sessions and development activities to continuously improve tutoring effectiveness

Undergraduate Research May 2024 – Aug 2024
CTBP Rice University *Houston, TX*

- Conducted research on cell differentiation of chromosome ensembles using minimal models
- Utilized Minimal Polymer Models to simulate and analyze Hi-C maps for multiple human cell lines
- Performed extensive simulations of Chromosome 10 across various cell lines
- Developed computational protocols for ensemble analysis using techniques such as PCA, t-SNE, and UMAP
- Collaborated with team members and presented findings in weekly meetings

Projects

Medical Clinic Management System | MySQL, Node.js, Express, Sequelize, React

- Designed and implemented a detailed database schema for efficient management of medical clinic operations
- Developed a backend API using Node.js, Express, and Sequelize ORM, establishing complex relationships between entities
- Implemented user authentication and role-based access control for secure data management across different user roles
- Created API endpoints for core functionalities including user registration, appointment scheduling, and medical record management

OpenMiChroM | Python

- Developed a Python-based analysis tool for processing and visualizing Hi-C data from chromosome simulations
- Utilized advanced dimensionality reduction techniques including PCA, t-SNE, and UMAP for analyzing chromosome structural ensembles
- Created efficient data processing pipelines to handle large-scale genomic datasets from multiple human cell lines
- Incorporated CUDA GPU acceleration and Multithreading capabilities to enhance performance on large datasets
- Implemented caching mechanisms to optimize repeated computations and improve overall efficiency
- Successfully differentiated human cell lines based on subtle differences in simulated chromosomal structures, revealing cell-type-specific information

Skills

Technical: C/C++, Python, JavaScript/TypeScript, PostgreSQL, Git, Linux/Unix, Docker
Development: Multithreading, Memory optimization, Full-stack development
Professional: Communication, Problem-solving, Research methodology, Team collaboration, Data Analysis

Relevant Course Work

Computer Science: Algorithms & Data Structures, Operating Systems, Database Systems, Software Engineering, Software Design
Mathematics: Linear Algebra, Probability, Statistics for Sciences, Calculus I-III, Discrete Mathematics