GILVIR GILL

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EDUCATION

STONY BROOK UNIVERSITY
Aug. 2018 - Dec. 2021

- **GPA** 3.96
- Pursuing B.S. in Computer Science and Mathematics with Political Science minor.

EXPERIENCE

RESEARCHER/ COORDINATOR
SBU PoliTech
Aug. 2019 - Present

- Aggregated Census and election data for 36 states using PySAL and GeoPandas. Wrote Java library (used in senior capstone class at SBU) for automated approaches to congressional redistricting.
- Coordinated three separate subteams to improve the redistricting algorithm. Achieved less than 0.5% population spread using graph partitioning techniques to recursively merge clusters.
- Created a demo frontend to smoothly display 20,000+ electoral precincts simultaneously in large states like California using React, Mapbox GL, and a custom vector tiling server.

UNDERGRAD TA
SBU C.S. Dept.
Aug. 2020 - Dec. 2020

- Teaching Assistant/Grader for Honors Theory of Computation (CSE 350) under Dr. Michael Bender. Course requires rigorous proofs in domains such as finite automata and complexity theory.
- Will conduct office hours and recitation. Working to transition to an online format, while maintaining the unique student-driven learning environment of the course.

PROJECTS

NYCIML SCORING
Dec. 2018 - Present

A scoring system for math competitions used by a 40-school math league with 550+ students, featuring a GraphQL API (Flask, SQLAlchemy, Graphene; custom integration of Graphene and Cerberus), and a React/Apollo front-end.

PATHFINDER
Apr. 2019 - May 2019

A JavaFX-based visualizer for pathfinding algorithms performed on a 2D grid that shows how nodes are expanded by a given algorithm (Dijkstra's, distance-heuristic A*, etc.). Includes a built-in map editor and animation speed control/stepping.

GO GRAPHICS ENGINE
Jan. 2018 - Jun. 2018

A Go-based 3D graphics/animation renderer and primitive CPU-based matrix library with parallelism, written from scratch. Supports Gouraud shading/Phong Reflection, affine transformations, and keyed animations on .obj files.

ACHIEVEMENTS / SKILLS

COURSEWORK
Honors Data Structures & Algorithms, Finite Math Structures, Statistics, Complex Analysis, Honors Theory of Computation, Systems I & II, Computer Networking, Natural Language Processing, Applied Real Analysis (PDEs)

LANGUAGES
Java, Python, Go, C, JavaScript/TypeScript

ACHIEVEMENTS
Junior Academy Biodiversity Challenge Winner (2017)
"Best Use of Blockstack" $1000 prize at HackPrinceton (2019)
Member of C.S. Honors program at Stony Brook

TOOLS & FRAMEWORKS
Node, Encog, Flask, (Geo)Pandas, PyTorch, MongoDB, SQL, React, GraphQL (Graphene, Apollo Client), MobX, PostGIS

OTHER SKILLS
Arduino, Adobe Illustrator/Photoshop, AutoCAD, SolidWorks