Gurmehar Singh

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EDUCATION

B.S., Double-Major in Honors Computer Science and Mathematics   Aug. 2022 – May 2025
Purdue University   *West Lafayette, IN*

EXPERIENCE

Telescope Operator   Feburary 2023 – May 2023, August 2023 – Present
SETI Institute   *Hat Creek, CA*
- Built a scheduler based on trajectories of objects throughout the sky to automate observation of neutron stars
- Built a data pipeline to automatically process observational data. Implemented data visualization at intermediate steps for validation and troubleshooting, to help with testing and verification of software updates.
- Building a system to observe and process data from masers in order to synchronize observations with other observatories around the world

Software Engineering Intern   May 2023 – August 2023
SpaceX   *Redmond, WA*
- Enriched data to allow analysis of Starlink traffic breakdown by geographic location and content distribution network (CDN) while obfuscating user-specific personal information
- Improved algorithms to calculate metrics to enable cost-efficient planning for ground infrastructure fault tolerance
- Formulated and implemented a market demand and user growth forecasting model to inform high-cost hardware capacity planning
- Received highest possible scores across all categories in final performance review; was offered a full-time position, but chose to continue pursuing my degree

Software Lead   October 2022 – Present
Space & Earth Analogs Research Chapter of Purdue (SEARCH)   *West Lafayette, IN*
- Currently leading a group of student researchers to compete in the NASA SUITS competition to develop an AR interface for astronaut space suits
- Spearheading a project to analyze genomic data to aid the development of space agriculture
- Conducting workshops to teach programming techniques for developing efficient and scalable software
- Collaborated with members of the Mars Society and Mars Desert Research Station to develop a data management system to catalog, organize and index all data from crew missions

Software Engineering Intern   June 2022 – August 2022
SETI Institute, Allen Telescope Array   *Hat Creek, CA*
- Built a data processing pipeline to track man-made sources of radio interference around the Allen Telescope Array, and eliminate noise from signal in targeted frequency bands
- Ingested data from multiple telescopes to automatically generate matches for satellite passes over the Array
- Created metrics to measure observation safety to avoid radio interference and loss of data during observations

Volunteer Intern   June 2020 – June 2022
SETI Institute, Allen Telescope Array   *Remote*
- Created software automation for configuring component operating parameters and detecting anomalies using available dynamic range, expected signal intensity, nominal performance characteristics and other data sources
- Created a unified data format for storing observational data; Migrated software from Python to C for performance
- Co-credited with the Array's first discovery of a Fast Radio Burst

PROJECTS

Gens Grandis | *Node.js, Python, Three.js*   January 2021 - May 2021
- Developed a Civilization IV-inspired turn-based game that can be played entirely in-browser
- Built the entirety of the game's logic using only JavaScript and Three.js, a 3D graphics library
- Created an AI for the player to battle against, composed soundtrack, and designed game models in Blender

TECHNICAL SKILLS

Languages: Python, C/C++, JavaScript, HTML/CSS, Bash, Java, SQL (MySQL, Spark), Scala, PromQL
Frameworks & Libraries: Node.js, NumPy, SciPy, Pandas, Tensorflow, OpenCV / PIL, Flask, Matplotlib, Prometheus
Developer Tools: Git, Docker, Google Cloud Platform, AWS, Jupyter, Metabase, Grafana