Kushagra Goel

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Education

Georgia Institute of Technology — Atlanta, GA
Bachelor of Science in Computer Engineering — *Expected May 2028*

Experience

Research Intern — July 2025 – Present
Children's Hospital of Philadelphia — *Philadelphia, PA*

- Utilized machine learning models in Python and R to analyze single-cell RNA sequencing data and the effect of model parameters on model clustering performance
- Tuned clustering models (k-means, Seurat, Ascent) to optimize subpopulation identification of immune cells.
- Reduced computation time by **90%** and increased model performance by **200%** of seurat models

Research Intern — July 2024 – October 2024
Children's Hospital of Philadelphia — *Philadelphia, PA*

- Applied k-means clustering models in Python/R, achieving a **silhouette score near 1,** to analyze scRNA-seq of children with Congenital Heart Disease
- Published findings on NK cell subpopulations in Experimental Biology and Medicine; co-author on peer-reviewed paper.
- Presented research at UPenn 2024 Bio-informatics Mid-Atlantic Conference

Projects

AI Prediction of Heart Disease/Attacks from Basic Health Data | *Python, Data Science, Data Analytics, scikit-learn*

- Applied Scikit-Learn ML models to predict risk of heart disease/attacks from health indicators, achieving a **93.75% test accuracy**
- Enhanced a heart disease prediction model by refining feature selection, improving precision **by 12%.**
- Conducted feature analysis to identify health markers most correlated with heart disease
- Visualized data trends and model outputs using seaborn and matplotlib to support interpretability and transparency in predictions.

Pathfinding Robot with Obstacle Avoidance | *VEXcode, Python, C++, PROS*

- Built and programmed a small-scale VEX robot to navigate complex mazes and avoid obstacles to autonomously navigate using sensor input.
- Programmed advanced autonomous routines in VEXcode, integrating sensor feedback and control logic to enable precise navigation, obstacle avoidance, and efficient pathfinding.

Personal Study Dashboard | *JavaScript, HTML, CSS, Web Services*

- Designed and executed a multi-page personal productivity dashboard using HTML and CSS
- Implemented YouTube API for Music and Pomodoro Timers.
- Created a Sticky Notes app using a custom, stylized interface for task tracking and planning.

AI Pick Up Line Generator | *Python, GPT-2 API, HTML, CSS, Javascript, Flask, Google Colab*

- Built a Flask web app that served AI-generated pick-up lines
- Integrated a GPT-2 model using aitextgen, reducing **average generation latency by 30%**
- Trained a custom GPT-2 (124M) model using the aitextgen library on Google Colab GPU. Optimized for faster text generation with real-time output every 1,000 steps.

Technical Skills

Languages: Java, Python, PROS, Vex Code, JavaScript, HTML/CSS, R, Kotlin
Developer Tools: Git, VS Code, PyCharm, IntelliJ, Anaconda, Arduino, Google Colab, Android SDK Mobile Technology
Libraries: Pandas, NumPy, Matplotlib, Scanpy, Scikit-Learn, Tkinter, Pygame, Flask