THOMAS YANG

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EDUCATION

Virginia Commonwealth University *Richmond, VA*
Bachelor of Science, Computer Engineering
Double minor in Computer Science and Mathematics

- **Relevant coursework:** Data Structures and Algorithms, Differential Equations, Multivariate Calculus, Discrete Math, Linear Algebra, Digital Logic, Applied Embedded Programming, Signals and Systems, Microelectronics, Microcomputer Systems

EXPERIENCE

Northrop Grumman May 2025 - Present
Engineering Intern *Dulles, VA*

- Built Python (**pandas, numpy**) tools that automated wire data validation and difference detection, reducing manual effort for engineers
- Developed a validation tool using graph models to trace and visualize (**matplotlib)** wire connectivity between endpoints, reducing manual checks by 70% and saving engineers over 30 hours per review cycle
  - Implemented fuzzy matching by utilizing Levenshtein Distance to detect naming inconsistencies between wire connectivity data
- Engineered a scalable differencing algorithm (bucket sort) to process Excel datasets with thousands of rows, outperforming legacy tools in speed by 30% and in accuracy
- Built intuitive GUIs using **Tkinter** for both tools, allowing engineers to easily select files, run comparisons, and export results without touching code
- Delivered these tools independently from design to shipment as executables, now actively used by engineers to accelerate QA and reduce human error

PROJECTS

PharmSenseAI | *React, Python, HTML/CSS, Flask*

- Led backend development for a full-stack app that uses natural language AI to detect medication conflicts and provide real-time health insights
- Integrated Flask with OpenAI models via OpenRouter to parse drugnames, identify potential conflicts, and summarize safe usage in plain, readable language
- Utilized React to design an intuitive frontend interface for drug entry and summaries

Smart Car | *C, STM32*

- Independently developed control firmware in C for an STM32 microcontroller to drive a miniature car along black tape paths
- Utilized reflectance sensors and programmed real-time logic to read sensor values and control motors via PWM
- Designed and implemented steering behavior for sharp turns, path corrections, and stop conditions
- Used low-level register manipulation to configure timers, GPIOs, and interrupts—successfully completing all test paths in trial runs

AI Movie Recommendation Engine | *Python*

- Built a movie recommendation engine using a Kaggle dataset, applying count-based vectorization and cosine similarity with **scikit-learn** to match user input to relevant films.
- Designed the system to deliver personalized recommendations in real time, showcasing applied machine learning for content-based filtering.

Video Game | *Python*

- Collaborated with a team of 4 to develop a 2D game with AI-powered enemy pathfinding using A* algorithm
- Optimized game loop performance and integrated sound system for immersive user experience

Robot Arm | *Arduino*:

- Built a 5-degree of freedom robotic arm with a wireless glove controller via Bluetooth
- Implemented motor coordination logic for accurate arm movement based on hand movement and finger gestures

TECHNICAL SKILLS

Programming languages: Python, C++, C, Javascript, HTML, CSS, MATLAB
Frameworks: React
Embedded Systems: STM32, Arduino
Developer Tools: Git/Github