Stanley Wong

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Education

M.S. in Computer Science - Machine Learning **Expected Dec. 2025**

4.0 GPA

Georgia Institute of Technology • Atlanta, GA

Specialization in Machine Learning

Relevant Coursework:
- CS 4510: Automata and Complexity
- CS 4400: Introduction to Database Systems
- CS 6476: Computer Vision
- CS 7632: Game AI
- CS 6601: Artificial Intelligence (Graduate Teaching Assistant for this course)

Awards:
- Earned Faculty Honors for Spring 2024. For students who have earned a 4.00 with over 12 credit hours per semester, and have an academic standing of Good and no Incomplete grades.
- Earned Dean's List for Spring 2024. For students who have earned a 3.00 with over 12 credit hours per semester, and have an academic standing of Good and no Incomplete grades.

Clubs/Academic Organizations:
- GT WebDev Club
- HackGT (Georgia Tech's annual hackathon)
- ImmerseGT (Georgia Tech's annual AR/VR/MR hackathon)
- GT Vietnamese Student Association
- GT Badminton Club

B.S. in Computer Science, **Graduated May 2024**

4.0 GPA

Georgia Institute of Technology • Atlanta, GA
Specialization in Intelligence and People threads.

Relevant Coursework:
- CS 1331: Introduction to Object-Oriented Programming
- CS 1332: Data Structures & Algorithms
- CS 2110: Computer Organization & Programming
- CS 2340: Objects and Design
- MATH 1554: Linear Algebra
- CS 3510: Design & Analysis of Algorithms
- CS 3750: User Interface Design
- CS 3630: Introduction to Robotics and Perception
- CS 3600: Introduction to Artificial Intelligence
- ISYE 3770: Statistics and Applications
- CS 4641: Machine Learning
- CS 4460: Introduction to Information Visualization
- CS 4660: Educational Technology

Awards:
- Earned Faculty Honors for Fall 2021, Spring 2022, Summer 2022, Fall 2022, Spring 2023, Fall 2023. For students who have earned a 4.00 with over 12 credit hours per semester, and have an academic standing of Good and no Incomplete grades.
- Earned Dean's List for Fall 2021, Spring 2022, Summer 2022, Fall 2022, Spring 2023, Fall 2023. For students who have earned a 3.00 with over 12 credit hours per semester, and have an academic standing of Good and no Incomplete grades.

Clubs/Academic Organizations:
- GT WebDev Club
- GT Vertically Integrated Projects Program
- GT Robojackets - Roboracing
- Grand Challenges LLC (Entrepreneurship course)
- HackGT (Georgia Tech's annual hackathon)

- ImmerseGT (Georgia Tech's annual AR/VR/MR hackathon)
- GT Vietnamese Student Association
- GT Badminton Club

Work Experience

Artificial Intelligence/Machine Learning Intern - May 2024 - Aug 2024
Interagency Implementation and Advanced Concepts Team (IMPACT)
National Aeronautics & Space Administration • Huntsville, AL 40 hours per week

Task:
Engaged in an internship managed by NASA Marshall Space Flight Center's Machine Learning team within IMPACT (Interagency Implementation and Advanced Concepts Team), an interdisciplinary organization under NASA in collaboration with the University of Alabama in Huntsville. The Foundation Model team at IMPACT had recently released Prithvi, a massive foundation model trained on 40 years of weather and climate data, and the main task was to create a natural language query interface that seamlessly connects users, like researchers and weather analysts, to Prithvi. The internship centered extensively around creating and evaluating the most effective Large Language Model (LLM) agent processes for this interface, and providing insights into the best approach.

Duties:
- Collaborated with NASA scientists to evaluate and select LLMs for integration into Prithvi, ensuring the models could reliably process natural language queries
- Designed and implemented two different agents, Single Chain and ReAct agents, as viable approaches for the natural language interface, using Python, LangChain, JavaScript, and a JSON output
- Employed red teaming techniques and prompt engineering to extensively test and refine the models, generating and assessing over 250 different prompts using Giskard
- Evaluated vulnerabilities and errors within the models, leading to targeted reductions in hallucinations and racial/sexist biases by the models, and key modifications to handle complex inputs, such as multiple field values, indiscernible fields, and dates/locations outside valid ranges
- Managed data analysis and model evaluation, storing results on token usage, accuracy, and completion time in CSV files for thorough review and data analysis.

Results:
Extensive evaluation and testing were conducted on two agents designed as potential models for natural language queries between users and Prithvi. Through iterative modifications and improvements on both approaches, model accuracy was enhanced by approximately 18%, and average completion time was reduced by around 8%. While the Single Chain model with an upgraded GPT-4 Turbo LLM achieved the highest accuracy despite increased token costs, the ReAct Agent demonstrated greater efficiency and better handling of biases. These advancements lay the groundwork for a more reliable and efficient natural language interface, a critical step toward enabling NASA researchers to interact with Prithvi more intuitively. The improved models not only streamline access to vast climate data but also set a precedent for future AI implementations at NASA, ultimately advancing the organization's broader mission to harness AI for scientific discovery and decision-making.

Full Stack Engineer Intern Jan. 2024 - May 2024
Hyperion Industries • New York, NY 20 hours per week

Task:
Hyperion Industries is a startup that aims to create a co-pilot software for aerospace companies to streamline the process of finding suppliers and automating communication with them. Backed with $3 million, the startup aimed to address an untapped market of supplier ease of access. However, their idea required rapid, continuous pivots and there was still a need to build out the co-pilot software. A comprehensive approach to both frontend and backend development, data collection, and system automation was needed to achieve their goal of significantly improving operational efficiency for Hyperion’s clients.

Duties:
- Designed and produced Figma mockups of all pages present in the co-pilot procurement web application
- Developed Python web scraper scripts using Selenium and Beautiful Soup to collect and structure data on over 30,000 supplier companies across 15+ different websites, forming the foundation of the backend
- Spearheaded the UI/UX design of the co-pilot procurement software, creating a user-friendly dashboard using React, Next.js, and TailwindCSS

- Engineered the backend structure by developing APIs using Django and SQL, ensuring robust and scalable integration with the frontend
- Automated the emailing process between user and supplier by integrating AWS SES and S3, parsing data from each email to craft an email response
- Collaborated closely with a small team, navigating the challenges of a startup environment to deliver to potential customers
- Engaged in strategic meetings with Jonathan Chen, founder of FiscalNote ($0.17B net worth) to gain insights on best practices for software engineering in a startup environment, focusing on optimizing development velocity, infrastructure design, and team collaboration

Results:
Through this internship, Hyperion Industries was able to deliver a working demo of a full-stack software solution that drastically reduced operational inefficiencies for aerospace companies. The software's frontend and backend were seamlessly integrated, and the automation features provided substantial time savings. Despite the challenges of working in a dynamic startup environment, the project was completed within a few months. When meeting and demoing with potential companies, they estimated that this software would slash daily operational time by 25%, which saves more than 2400 hours annually. In addition, large companies like Kencoa Aerospace valued the software at approximately $40,000, demonstrating the high-impact technical proficiency brought through the internship.

Software Engineer Intern May 2023 - Aug. 2023
Spectrum (Charter Communications) • Greenwood Village, CO 40 hours per week

Task:
Spectrum is the trade name of Charter Communications, which offers cable television, internet, telephone, and wireless services. Spectrum mostly focuses on home internet, business plans, mobile services, and streaming. The internship was a part of Spectrum's Data Science and Experimentation department within the Product & Technology Experimentation program. The role of the internship focused on enhancing Charter's internal experimentation platform, Distillery. Distillery allows data scientists at Spectrum to be able to conduct different forms of experimentation, such as A/B testing or Canary testing, on Spectrum's customer-facing applications. Before arriving at the position,

Distillery would display metric updates on experiments and update these metrics every 24 hours, calling data from ElasticSearch. This internship involves the integration of real-time data processing capabilities into Distillery and improving user interface functionality for over 1500 users.

Duties:

- Initiated the enhancement of Distillery by reducing the frequency of metric updates from every 24 hours to real-time, enabling users to monitor and analyze customer experiences instantly
- Utilized Axios and GraphQL requests to stream usage data from real-time analytics databases like Apache Druid into Distillery's metric page, and integrated Nest.js to connect the request-response mechanism to the UI, facilitating real-time tracking and analysis within the Distillery software
- Patched front-end issues and improved Distillery's UI using React.js hooks, Typescript, and Node.js to ensure a smooth user experience
- Actively participated in agile ceremonies, including planning, reviews, retrospectives, and demos, contributing to the iterative development process
- Collaborated with a team of 9 to develop a three-part solution during a company-wide hackathon aimed at closing the digital divide in rural areas, demonstrating a commitment to leveraging technology for social impact

Results:

Through this internship, the Distillery platform's capabilities were greatly improved with real-time monitoring and analysis, which significantly increased the efficiency and accuracy of experiments for over 1500 users. This enhancement allowed users to detect and correct errors or faulty setups immediately, rather than waiting 24 hours, leading to more informed and timely decision-making. Additionally, the front-end bug fixes resulted in a more intuitive and seamless user interface, further improving the overall user experience. The solution produced by our team for the hackathon project also demonstrated the potential of innovative technology solutions to address critical societal challenges like the digital divide.

Graduate Teaching Assistant for CS 6601: Artificial Intelligence Aug. 2024 - Present

Georgia Institute of Technology • Atlanta, GA 20 hours per week

Task:
CS 6601: Artificial Intelligence is a Master's level course as part of the Machine Learning specialization of Computer Science, and is one of the most difficult courses in Georgia Tech's Computer Science curriculum. Students taking the course must be familiar with college-level mathematical concepts (calculus, analytic geometry, linear algebra, and probability) and computer science concepts (algorithms, O notation, data structures). Students must also have strong experience of Python in order to complete the assignments. Graduate Teaching Assistants help assist the academic development of students to understand the difficult concepts for their classes. Being a Graduate Teaching Assistant for this course requires providing clear and effective instruction on advanced AI topics, and involves both teaching and administrative responsibility in order for the successful delivery of the course.

Duties:
- Instructed students twice a week on key AI concepts, including Search Algorithms, Game Theory, Bayes Nets, Decision Trees, Gaussian Mixture Models (GMMs), and Hidden Markov Models (HMMs)
- Assisted in the design and grading of assignments and exams, ensuring alignment with course objectives and maintaining academic standards
- Provided one-on-one and group support during office hours, helping students grasp complex concepts and apply them to practical problems
- Collaborated with fellow TAs to manage course logistics, including organizing review sessions, facilitating discussions on Ed Discussion, a Q&A forum, and responding promptly to student inquiries
- Participated in weekly TA meetings to discuss course progress, addressed student concerns, and implemented instructional improvements

Results:
Through this Teaching Assistant position, the learning experience was enhanced for over 1,200 students, ensuring they acquire a deep understanding of artificial intelligence principles. Ongoing efforts in this role contributed to improved student performance on assignments and exams, and also fostered a collaborative and supportive learning environment. The smooth execution of course logistics and timely responses to student needs have also been key factors in maintaining high course satisfaction ratings.

Projects

StockWise August 2023 – December 2023

Machine Learning Engineer

- Developed ML models to predict NASDAQ stock price movement using Keras and TensorFlow, which enables quick building, training, and testing of neural networks
- Implemented a Sequential Neural Network model with multiple Dense Layers, ReLU activation, and L2 regularization, achieving 52% accuracy in predicting stock movement direction
- Designed and tested an LSTM model that required converting 2D data to 3D format to capture time-series dependencies, resulting in better performance (MAE = 5.376) compared to the simple neural network (MAE = 5.433)
- Employed metrics such as Mean Squared Error (MSE), Mean Absolute Error (MAE), and Absolute Percent Difference to evaluate model effectiveness and guide improvements
- Overcame challenges related to the unpredictable nature of stock prices and the risk of overfitting by refining model architecture and testing different approaches

Deepfake Detection August 2023 – December 2023

Computer Vision Engineer

- Developed a robust model using a hybrid CNN-RNN architecture for deepfake detection in videos, leveraging Python, NumPy, Scikit-learn, and TensorFlow
- Evaluated the model's performance under various video distortions (noise, resolution changes, facial obstructions, contrast variations, and shadowing), achieving up to a 5% accuracy improvement over baseline models
- Executed experiments on 400 videos from the Deepfake Detection Challenge (DFDC) dataset, finding that lower resolution led to the lowest accuracy, while adding shadows yielded the highest accuracy
- Contributed to the computer vision field by analyzing the robustness of deepfake detection models against real-world modifications, providing insights into the adaptability and resilience of these systems under different conditions

- Presented findings in detailed reports, demonstrating the importance of enhancing detection capabilities to maintain the authenticity of digital content in the midst of advanced synthetic media

Ceptron October 2022

Project Lead - HackGT 9 hackathon

- Directed a team of four to build a machine-learning based virtual-assistant web application that allows users to invoke complex machine learning models using keyboard shortcuts, adding functionality for text-to-image generation, summarization of URLs, and natural language assistant features
- Developed the backend implementation of Stable Diffusion, used for text-to-image generation, on a Compute Engine virtual machine, enabling large-scale image generation
- Utilized the sumy model to summarize lengthy articles, and leveraged GPT3 AI models to generate natural language responses to a prompt
- Integrated multiple cloud services, including Cloud Run for backend hosting, Compute Engine for GPU-based inference, and Firebase for routing and static hosting, ensuring a robust and scalable architecture
- Deployed our cross-platform desktop application built on Electron.js, offering users a simple yet polished interface for interacting with complex machine learning models

BeSpoked Wheels August 2022 - December 2022

Full Stack Developer

- Implemented a sales-tracking web application that enables users to edit or add to a company's assets and calculates quarterly commission reports for each salesperson
- Leveraged React.js for building a dynamic and user-friendly interface, enhancing the overall user experience
- Developed a MySQL backend to store and manage company data, ensuring efficient data handling and retrieval
- Utilized Axios to send HTTP requests to REST endpoints in an Express.js server, facilitating smooth communication between the frontend and backend

EduVR March 2023

Lead Application Developer - ImmerseGT hackathon

- Developed a mixed-reality mobile app focused on teaching STEM concepts to young students, utilizing high-fidelity hand tracking to manipulate virtual objects in augmented reality
- Contributed to the project's mission of reducing educational inequality by creating an easily accessible learning tool that does not rely on expensive hardware, in order to make STEM education more inclusive
- Led a team of 6 to create multiple interactive stations within the app, each dedicated to different STEM subjects, allowing users to use hand gestures to engage with virtual objects in an educational context
- Integrated Python and Unity using OpenCV and MediaPipe to achieve hand-tracking through single point-of-view computer vision, and utilized ARKit and Swift for IOS functionality, providing an interactive and immersive learning experience

ReVision October 2023

Lead IOS Developer - HackGT X hackathon

- Engineered an augmented reality (AR) app that allows users to visualize images and participate in a memory game, integrating real-world environments with digital content
- Created the app using ARKit, Swift, and SwiftUI on XCode, with a focus on delivering a seamless and immersive user experience
- Enhanced AR rendering across various devices, ensuring consistent performance and improving the app’s reliability
- Designed and implemented image recognition and matching algorithms, successfully integrating AR features to elevate user engagement

Campus Discovery Service September 2022 - December 2022

Engineering Manager

- Developed an Android app using Android Studio to increase campus event awareness through real-time data, in order to enhance student engagement

- Implemented features for event organizers to create and edit events with location, time, duration, and descriptive tags, utilizing XML, Java, and Kotlin
- Established REST endpoints for storing location-aware events, allowing students to easily RSVP and participate in campus activities

COVID-19 Data Analysis June 2022 - July 2022

Data Analyst

- Collaborated with a team to scrape and compile weekly data on COVID-19 cases, Air Quality Index, TSA Check-ins, and gasoline prices
- Analyzed relationships between these variables by examining data trends and visualizing the results using Tableau and Figma
- Identified a significant 88% reduction in TSA check-ins and a 28% decrease in gas prices during the initial spread of COVID-19, followed by a 38% reduction in TSA check-ins and 6.4% decrease in gas prices during the Omicron spike

Extracurricular Involvement

GT WebDev Club January 2022 – December 2023

Georgia Institute of Technology

- Created Web Video Chat, a video-chatting application as a web app, primarily coding with JavaScript, HTML, and CSS with React and handling frontend integration with Figma to deliver a seamless user experience
- Developed Connect @ GT, a web application featuring a 3D model of the Georgia Tech campus with interactive markers and user-friendly map movement. Led the blueprinting of the application, creating the architectural skeleton for other subteams to build upon
- Built GT Reviews, a "Yelp" for Georgia Tech that provides reviews of dining halls, dorms, classes, professors, and clubs. Created majority of the backend with Node.js and worked extensively with Firebase to manage the database, ultimately integrating it with a React frontend

GT Vertically Integrated Projects (VIP) Program August 2022 – December 2023
Georgia Institute of Technology

- Designed and managed the website for an ongoing project focused on creating a hip-hop-based archive, featuring a subscription-based portal for materials and exhibits, along with a VR experience for interactive music engagement
- Aided with API integration, ensuring seamless data flow between systems, and conducted audits of records to maintain the accuracy and reliability of the archive
- Designed Figma mockups for various pages in the digital archive management platform, contributing to the platform's user interface and experience design

Badminton
Varsity Team Captain & Georgia Tech Competitor

- Led the high school varsity badminton team as Captain, starting in the lineup from freshman year and guiding the team to first place in the county during conference play in 2021
- Received the Senior Leadership Award and the Outstanding Performance Award for remaining undefeated in county conference play
- Awarded All-County and All-Conference honors for two consecutive years from the 2019-2020 and 2020-2021 seasons, recognizing exceptional performance and leadership on the court
- Competed in several badminton tournaments representing Georgia Tech as part of the GT Badminton Club, including reaching the semi-finals in the Atlanta Badminton Open 2021 and the quarter-finals in the Gator Smash 2021 at the University of Florida

Deaux
Co-Founder & Chief Marketing Officer

- Co-founded Deaux, a non-profit startup focused on enhancing financial literacy education through a multiplatform Learning Management System (LMS) aimed at middle school students

- Developed engaging educational content, including videos, interactive games, and assessments, to teach essential financial concepts effectively
- Led marketing efforts, growing the brand through social media and educational outreach, resulting in increased visibility and recognition
- Advanced to the Pitching Round for the Diamond Challenge, a global high-school entrepreneurship competition, displaying the startup's innovative potential

Honors and Awards

Faculty Honors Awarded Fall 2021, Spring 2022, Summer 2022, Fall 2022, Spring 2023, Fall 2023, Spring 2024

Georgia Institute of Technology

Earned Faculty Honors for Fall 2021, Spring 2022, Summer 2022, Fall 2022, Spring 2023, Fall 2023, Spring 2024, given to students who have earned a 4.00 for 12 credit hours or more

Dean's List Awarded Fall 2021, Spring 2022, Summer 2022, Fall 2022, Spring 2023, Fall 2023, Spring 2024

Georgia Institute of Technology

Earned Dean's List for Fall 2021, Spring 2022, Summer 2022, Fall 2022, Spring 2023, Fall 2023, Spring 2024, given to students who have earned a 3.00 for 12 credit hours or more

Study Abroad

Universitat Politècnica de Catalunya (UPC) – Barcelona Tech May 2022 - August 2022

Barcelona, Spain

- Relevant Coursework: Human-Computer Interaction, Information Visualization, Database Systems, Educational Technology
- Immersed in Spanish culture by attending local festivities, experiencing daily life in Barcelona, and gaining a deeper appreciation for the rich history and traditions of Spain
- additional travel time information, resulting in a more intuitive and efficient booking process.
- Collaborated on a project to redesign and improve the user experience for the Barcelona train seat reservation system by creating a mobile app with optimized search and sorting features, and additional travel time information, resulting in a more intuitive and efficient booking process

Volunteering

Food Bank Volunteer July 2023

Food Bank of the Rockies

- Led the initiative of volunteering for the Food Bank of the Rockies, where we packaged and sealed food bank boxes to be shipped, disassembled used boxes storing raw food, and supplied food bank boxes with different canned food and beverage items
- Distributed over 30,000 meals to those experiencing food insecurity

Languages

- English - Fluent
- Cantonese - Advanced
- Mandarin - Intermediate