

# Jason Klein

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## Education

### Cornell University, College of Arts & Sciences

Expected May 2026

Bachelor of Arts in Computer Science (GPA: 4.036 / 4.0)

Ithaca, NY

- Organizations: Cornell Electric Vehicles Project Team (Software Subteam), Development in Games Association, Cornell Maker Club, Cornell Intellectual Property/Ethics Club, Cornell Outdoor Education (staff)
- Relevant Coursework: CS 4620 (Computer Graphics), CS 6682 (Computation for Content Creation), CS 4220 (Numerical Analysis), CS 2112 (Honors OOP and Data Structures), MATH 2210 (Linear Algebra)
- Honors: Dean's List 2022-2023, A<sup>+</sup> in CS 2112 and CS 4220

### Thomas Jefferson High School for Science and Technology

June 2022

Advanced Studies Diploma (GPA: 4.427 / 4.0)

Alexandria, VA

- Organizations: Young Game Developers Association, Unmanned Aerial Vehicle Team, HackTJ Hackathons (3x), Electronics Club, Code++ Club, National Honor Society, TJ Theater Arts, TJ Chimeras Ultimate Frisbee
- Relevant Coursework: Artificial Intelligence, Automation/Robotics, Analog/Digital Electronics, Linear Algebra

## Technical Proficiencies

- Languages and Frameworks: HTML/CSS/TS (React, Node), Python (NumPy), Swift, Julia, C++ (Arduino), Java
- Software: Git/GitHub, Affinity Photo/Designer, Figma, Overleaf, Autodesk Tinkercad/Fusion360, KiCad

## Publications

### *ColorfulCurves: Palette-Aware Lightness Control and Color Editing via Sparse Optimization*

[paper](#) / [code](#)

Cheng-Kang Ted Chao, **Jason Klein**, Jianchao Tan, Jose Echevarria, Yotam Gingold

*ACM Transactions on Graphics (TOG)*. Presented at SIGGRAPH North America, 2023

### *LoCoPalettes: Local Control for Palette-based Image Editing*

[paper](#) / [code](#)

Cheng-Kang Ted Chao, **Jason Klein**, Jianchao Tan, Jose Echevarria, Yotam Gingold

*Computer Graphics Forum (CGF)*. Presented at Eurographics Symposium on Rendering (EGSR), 2023

## Research

### Student Researcher, Cornell Bowers Undergraduate Research Experience ([BURE](#))

June 2023 to Present

*DynaBox: Digital Signal Processing for Talkbox Effect Extraction*

Ithaca, NY

- Conducted independent research in the Cornell Graphics and Vision Group, mentored by Prof. Abe Davis
- Developed novel deconvolution process using Linear Predictive Coding; created SwiftUI iOS app for recording
- Attended BURE mentorship sessions and guest lectures, Prof. Steve Marschner's CS 6630 (Realistic Image Synthesis) summer lectures, and reading group discussions on cutting-edge topics such as diffusion models

### Intern, George Mason University (GMU) Creativity and Graphics Lab

August 2021 to August 2023

### Student Researcher, GMU Aspiring Scientists Summer Internship Program ([ASSIP](#))

June 2021 to August 2021

*ColorfulCurves; LoCoPalettes; A More Representative Approach to Image Decomposition by Color*

Fairfax, VA

- Conducted research mentored by Prof. Yotam Gingold; attended conferences (SIGGRAPH 2021, SGP 2021/22)
- Contributed to drafts and rebuttals; participated in meetings; read ML/CV and image processing papers
- Developed abstract (<https://tinyurl.com/KleinASSIPAbstract>) and slides (<https://tinyurl.com/KleinASSIPSlides>)

### Senior Research Project, TJHSST Computer Systems Research Lab

August 2021 to May 2022

*Constraint-Based Image Segmentation with Optimized Superpixel Merging*

Alexandria, VA

- Developed novel image segmentation process with superpixel graphs and semantic features from a neural network
- Presented findings at tjSTAR student symposium and created poster (<https://tinyurl.com/KleinTJPoster>)

## Extracurricular Activities

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### **Embedded and Full Stack Software Engineer, Cornell Electric Vehicles Team** **October 2022 to Present**

- Interfaced ESP32 and RPi-based sensors with web dashboard, working across electrical and software teams
- Ran team meetings outlining technical requirements; gave workshops on relevant topics such as WebSockets

### **Junior Web Dev Chair and Technology Chair, National Honor Society** **September 2020 to June 2022**

- Led a 7-student team through design and development of website (<https://activities.tjhsst.edu/nhs/about>)
- Developed webpage assigning 150-student induction ceremony seats for contact tracing; mail-merged certificates

### **Set and Electronics Technician, Run Crew, and Pit Member, TJ Theater Arts** **January 2022 to May 2022**

- Developed Arduino-automated scene label sign system; helped assemble life-sized scenery; played bass guitar

### **Member and Frontend Software Developer, TJHSST Unmanned Aerial Vehicle Team** **October 2018 to June 2021**

- Designed and developed ground control station in React; rebuilt website as webmaster (<https://tj-uav.github.io/>)
- Placed 23<sup>rd</sup> overall at the 2019 AUVSI SUAS Competition (<https://www.auvsi-suas.org/competitions>)

## Experience

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### **Part-Time Assistant Instructor, Jhoon Rhee Tae Kwon Do (Arlington, VA)** **August 2020 to May 2022**

- Led classes of 20+ students age 4 to 16, grouped by belt rank; managed technology for virtual classes
- Participated in leadership training program for part-time staff to develop teaching and communication skills

### **Volunteer Instructor, Jhoon Rhee Adaptive Tae Kwon Do Program (Arlington, VA)** **August 2016 to July 2022**

- Adapted curriculum and life skills lessons for individualized instruction of students age 7 to 16 with special needs
- Collaborated with master instructor to develop virtual and hybrid programs; served as virtual technology lead

### **Volunteer Frontend Software Engineer, Youth COVID-19 Relief Organization (Remote)** **April 2020 to May 2020**

- Helped build website to connect PPE donors with hospitals in need (<https://github.com/fighting-covid/website>)
- Designed initial website in Figma; drafted with HTML/CSS/JS; contributed to rewrite in React with NextJS

## Projects

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### **RLIRL: Rocket League In-Real-Life** **April 2023 to Present**

Team Project; Cornell Maker Club Make-A-Thon 2023, Cornell University Ithaca, NY

- Programmed nRF24L01 radio modules for remote keyboard control of vehicle, fans, and gyroscopic flywheel
- Continuing development of mid-air gyroscopic stabilization system with feedback controls

### **FWATE: Food Waste Addressed with Telecom Engineering** **October 2022**

Team Project; Cornell BigRed//Hacks 2022, Cornell University Ithaca, NY

- Wired and programmed Raspberry Pi camera; designed logo; developed WebSocket-backed React frontend

### **Wireless Arduino Fruit Ninja Sword with MPU** **May 2021 to June 2021**

Final Individual Project; Automation and Robotics II – Micro Systems, TJHSST Alexandria, VA

- Created Arduino program converting physical movement to digital animation (<https://youtu.be/GA0KhTFJGIA>)

### **Parkalot: A Scalable Solution for Large Outdoor Parking Lots** **April 2021**

Team Project; HackTJ Hackathon 8.0, TJHSST Alexandria, VA

- Led hardware design and implementation; linked ultrasonic sensor to our web server using an onboard Wi-Fi chip
- Awarded Best Hardware Hack Sponsored by Digi-Key Electronics (<https://devpost.com/software/parkalot-3jzhi7>)

## Interests and Hobbies

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Digital Audio Processing, Game Development, Tae Kwon Do (black belt), Outdoor Adventure, Dungeons and Dragons