JAKE FRISCHMANN

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EDUCATION

University of Maryland, College Park Expected May 2028
B.S. in Computer Science and B.S. in Physics (Dual Degree) **GPA: 3.85, Dean's List 2025**
Minor in Quantum Science and Engineering; Accelerated B.S./M.S. in Computer Science (2028–2029)
AppDev Henson Day Initiative, Bitcamp Quantum Organizer, Robotics Terafromers Software

EXPERIENCE & RESEARCH

Zheng Research Lab, Drexel University *Research Assistant* May 2025 – Jul 2025 *Philadelphia, PA*
Department of Mechanical Engineering and Mechanics

- Designed soft robotic manipulators (SpiRob) in SolidWorks to grasp complex geometries via tendon-driven continuum structures and tentacle-style grippers, and built GPU-accelerated simulations of actuated cables and soft-body dynamics in NVIDIA Isaac Gym. Full-time research internship position, use of 3D printers and laser cutters

Pennsylvania Governor's School for the Sciences (PGSS) *Researcher* Summer 2024 *Carnegie Mellon University*

- Led a BlokusDuo deep RL team, building PPO + MCTS self-play agents with CNN board encodings that achieved ~85% win rate over tuned heuristics across 18,000+ GPU games and co-authored a 20-page peer-reviewed PGSS Journal paper on the architecture and experiments.

Directed Anxious Generation Correlational Study *Lead Researcher* Aug 2024 – Dec 2025

- Led a stratified, cluster-sampled survey of high school students (n ≈ 140) linking multi-platform screen time metrics to validated measures of social connectedness and sleep, cleaning heterogeneous iOS/Android usage data and performing linear regression/t-tests (α = 0.01) that found statistically significant negative associations between weekly phone use, sociability, anxiety, and weekday sleep.

Drexel Bioengineering Summer Program *Research Intern* Summer 2022 *Philadelphia, PA*

- Prototyped AR-enhanced physical-therapy goggles in Blender with ergonomic head-mounted geometry and real-time motion-tracking feedback overlays; presented design to Drexel Bioengineering faculty as part of a structured summer research cohort.

PROJECTS

HensonDay AR Campus Events App *ARCore, SwiftUI, iOS*

- Architecting a production iOS AR app for UMD's Henson Day (20,000+ annual attendees) with the AppDev club, integrating ARCore world-anchoring and spatial persistence to lock AR creatures to real campus landmarks; SwiftUI drives a reactive native UI with component-based architecture and CI/CD across a 5+ engineer club team.

Face Tracking Space Invaders - 1st Place, Hackstoga 2023 *Python, OpenCV, dlib, cvzone*

- Webcam-based dodge game with no keyboard and no mouse: your body is the controller. Background subtraction turns your silhouette into a live collision mask. A dlib correlation tracker locks onto your face and overlays a spaceship. Smiling when hit gives a 50% chance to survive.

Orbit UMD *SvelteKit, TypeScript, Supabase, GitHub Actions*

- Designed and deployed a full-stack academic planning platform for UMD students, building real-time course search against UMD's public API s, automated degree-audit logic, and a four-year schedule planner; configured GitHub Actions CI/CD to deploy on every merge and leveraged Supabase row-level security for per-user data isolation.

RoadTrip: AI-Enhanced Vacation Planning iOS App *SwiftUI, GPT-4, REST APIs*

- Shipped a SwiftUI iOS app that orchestrates GPT-4, Google Maps, and Booking.com APIs to generate multiday itineraries, with CoreLocation/CoreData-backed offline storage and resilient networking (retries, rate-limit handling, caching) for smooth performance on unreliable networks.

TOOL: Music Generation & Style Transfer Platform *Python, PyTorch, TensorFlow*

- Engineered a TOOL-style music generation and style-transfer platform end-to-end: built a custom audio/lyrics scraper for dataset ingestion, trained U-Net-inspired generative models with mixed-precision FP16 training, and ran TensorBoard-tracked sweeps across 12+ architectural variants to optimize rhythmic and harmonic fidelity in generated outputs.

Medication Management and Adherence App — In Progress *React Native, TypeScript, HCI*

- Applying HCI principles like progressive disclosure, friction-in-design, and habit-loop scaffolding to architect a cross-platform React Native medication adherence tracker; conducted 8-participant prototype testing sessions, using findings to redesign the onboarding flow and reduce measured task completion time by ~40% in follow-up trials.

TECHNICAL SKILLS

Languages Python, C++, C#, Rust, Swift, JavaScript, TypeScript, SQL, R
Project Management GitHub, GitLab, GitHub Actions, Jira, pytest, Prettier, CMake
Machine Learning Coursera Deep Learning Specialization, PyTorch, TensorFlow, Hugging Face Hub, Kaggle
Computer Vision OpenCV, dlib, Haar Cascades, ARCore, Background Subtraction
Web and Cloud MERN stack, React Native, SvelteKit, REST APIs, OAuth, .NET MAUI, SwiftUI, Supabase
Robotics SolidWorks, NVIDIA Isaac Gym, G-code, Soft Robotics Simulation

REFERENCES

Available upon request, including:

- Dr. Yue (Luna) Zheng, Mechanical Engineering Professor, Drexel University yz894@drexel.edu
- Mollie Kaufer, Communications Professor, University of Maryland mkaufer@umd.edu