JAKE FRISCHMANN

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GitHub — LinkedIn

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*
Robotics Terraformers (software division); Bitcamp Events Quantum Track Organizer; Olympia Academy

TECHNICAL SKILLS

Languages	Python, C++, C#, Rust, Swift, JavaScript, TypeScript, SQL, R
Project Management	GitHub, GitLab, GitHub Actions, Jira, pytest, Prettier, CMake
Modeling Simulation	Blender, SolidWorks, Ortur laser engraver, Unity, GPU physics simulation (Isaac Gym)
Machine Learning	Coursera Deep Learning Specialization, PyTorch, TensorFlow, Hugging Face Hub, Kaggle
Data and Databases	Pandas, NumPy, SQL, data analysis, visualization
Web and Cloud	MERN stack, React Native, REST APIs, OAuth, .NET MAUI
CAD and 3D	SolidWorks, Blender, 3D modeling, 3D printing, AR prototyping
Robotics and Control	Soft robots, tendon driven manipulators, simulation to hardware control

EXPERIENCE & RESEARCH

Zheng Research Lab *May 2025 – Jul 2025 Philadelphia, PA*
Department of Mechanical Engineering and Mechanics, Drexel University
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. Improved gasping non-standard objects compared to current industrial machines.

Pennsylvania Governor's School for the Sciences (PGSS) *Summer 2024 Carnegie Mellon University*
Full-time research student for a highly selective residential STEM program (7% admit rate) at Carnegie Mellon University. Led game theory and intelligent agents research team using deep reinforcement learning for BlokusDuo; implemented PPO + MCTS agents, ran large server-based data collection, and co-authored a 20-page paper published in the PGSS Journal.

Drexel University Summer Programs *Summers 2022–2023 Philadelphia, PA*
Prototyped AR Blender-based physical therapy goggles with embedded sensing and human-centered interaction design.

PROJECTS

BlokusDuo Game Agents with Deep Reinforcement Learning *Python, PyTorch, RL, MCTS*
PGSS Research Project; Published in PGSS Journal. Built self-play agents to consistently beat tuned heuristic players using PPO and CNN-based board encodings, achieving ∼85% win rate over 18,000+ GPU-accelerated self-play games with Optuna sweeps and ablations, and documented a reproducible deep RL pipeline in a peer-reviewed PGSS Journal paper.

RoadTrip: AI-Enhanced Vacation Planning iOS App *SwiftUI, Flutter, GPT-4, Google Maps API*
Built a conversational trip-planning app to generate multi-day itineraries by orchestrating GPT-4, Google Maps, and Booking.com APIs for routes, lodging, and activities, with CoreLocation, CoreData-backed offline storage, and resilient networking (retries, rate-limit handling) to keep UX responsive under real-world network conditions.

TOOL: Music Generation & Style Transfer Platform *Python, PyTorch, TensorFlow, Hugging Face*
Built an experimentation platform to generate TOOL-style music by scraping Spotify audio/lyrics and training U-Net-style generative models for style transfer. Used mixed-precision training and hyperparameter search with TensorBoard.

Maze Escape: Cross-Platform Puzzle Game *C#, .NET MAUI, Algorithms*
Built a cross-platform labyrinth-solving maze game for iOS and PC, supporting 10+ maze-generation methods and pathfinding solvers (A*, BFS, DFS, Dijkstra) with a consistent .NET MAUI/XAML UI adapted from Figma prototypes and custom designs.

REFERENCES

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