Jake Jacobi

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Education

Purdue University West Lafayette, IN
Bachelor of Science in Computer Science | GPA: 3.6 | Dean's List *Aug. 2025 – May 2028*
Minors: Mathematics and Spanish

Research Experience

Project ECHO – Agricultural UAV Research Aug. 2026 – Present
Co-founder & Software Lead *Purdue University*
- Co-founded a three-person agricultural UAV team; worked with faculty to secure a funding commitment of $5,000.
- Developed a Python/OpenCV prototype to estimate plant stand coverage; analyzed labeled crop imagery.
- Coordinated technical outreach; planned a UI, GPS flight tracking, 3D reconstruction, and crop-health analysis.

The Data Mine, Purdue University Aug. 2026 – Present
Undergraduate Data Science Researcher *West Lafayette, IN*
- Developing an AI agent with Cummins to retrieve historical fault tree analyses and prioritize investigation branches.
- Designing evidence-backed branch ranking and traceable recommendations to prioritize diagnostic tests by expected return on investment.

Experience

CS 17700 Computer Science Teaching Assistant Jan. 2026 – Present
Purdue University *West Lafayette, IN*
- Support Python instruction and hold office hours on debugging, functions, object-oriented design, and image programming.

Electric Vehicle Club (EVC) Sep. 2025 – May 2026
Computer Vision Team *Purdue University*
- Developed Python/OpenCV perception for an autonomous EV go-kart, including object detection and lane recognition.
- Team placed 1st of 9 international teams at the 2026 Autonomous Karting Series US National Grand Prix; 1st in qualifying (1:03 fastest lap).

Private Computer Science Tutor May 2025 – July 2025
Self-Employed *Bend, OR*
- Taught Java, Lua, C#, and Scratch through game-development projects in Unity, Roblox Studio, and Scratch.

Projects

Jarvis – AI Voice Assistant | *Python, JavaScript, MQTT, FFmpeg* | GitHub
- Co-developed a voice assistant integrating speech recognition, LLM responses, and Sonos audio via MQTT.
- Built a web dashboard for remote commands, live status, and photo/video capture.

Chess Engine and Bot | *C++, C#, Unity* | Demo | GitHub
- Built a chess engine with minimax, alpha-beta pruning, quiescence search, and positional evaluation; integrated it into Unity.

Physics Engine | *JavaScript, HTML5 Canvas* | Demo | GitHub
- Built a 2D JavaScript physics engine with rigid-body dynamics, collision detection, and impulse-based collision resolution.
- Implemented friction, restitution, torque, angular damping, and moments of inertia in an interactive sandbox.

Minecraft Server Development | *Java, Spigot API (PandaSpigot), Maven*
- Developed Java minigames for a public Minecraft server serving over 6,000 unique players.

Technical Skills

Languages: Java, Python, C++, C#, C, JavaScript, TypeScript, Lua, Swift, HTML/CSS
Technologies: Git, GitHub, React, Next.js, Firebase, OpenCV, Unity, Maven, Railway
Concepts: Data Structures, Algorithms, Object-Oriented Programming, Computer Vision, AI, Optimization

Additional Information

Spanish: Fluent; immersion education and study abroad in Peru and Spain.
Interests: Rock climbing, pickleball, table tennis.