Diwen Huang

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Technical Skills

Languages: Python, Swift, Kotlin, TypeScript, JavaScript, Java, C++, HTML/CSS

Frameworks & Tools: SwiftUI, React, React Native, Next.js, Tailwind CSS, Firebase, Gemini API, Git, GCP, Android Studio, Figma, Bash, Pygame

Machine Learning: PyTorch, TensorFlow, CoreML, OpenCV, YOLOv5, ONNX, CUDA, Kalman Filtering

Experience / Research

Founder & Lead Developer | *Smashspeed AI* — May 2025 – Present

- Developed the core real-time computer vision pipeline for iOS using YOLOv5, CoreML, and Kalman filtering to calculate badminton smash speeds with high precision on-device.
- Achieved 93% model accuracy by personally labeling 13,000+ images and training YOLOv5 on a custom, user-collected dataset of 15,000+ images using NVIDIA A100 GPUs on Google Cloud.
- Architected the application's scalable Firebase backend to support thousands of registered accounts and daily active users with authentication, cloud storage, and real-time data synchronization.
- Led a team of 6 engineers and designers, scaling the iOS app to 20,000+ downloads and ranking #1 in Taiwan (Sports) and #2 in Vietnam (Sports) on the App Store through a viral campaign that generated 1M+ views.
- Spearheaded the Android release, leading React Native and Kotlin development and porting models with ONNX for cross-platform inference.

Freelance Software Engineer | *Self-Employed* — Aug 2025 – Present

- Build full-stack web apps with React and Next.js for small businesses and non-profits.
- Deliver tailored solutions that improve clients' online presence and engagement.

Computer Vision Researcher | *Independent* — May 2025 – Sep 2025

- Authored and published a research paper on arXiv detailing the novel vision-based algorithms developed for the Smashspeed AI application.
- Validated the system's performance and accuracy through rigorous testing under the mentorship of experts from Stanford (PhD, CS) and UPenn (MEng, Data Science).

Certified Badminton Coach | *NCCP Level 2* — Sep 2024 – Present

- Improve athlete performance at provincial and regional levels by integrating Smashspeed AI into private coaching sessions ($90/hr) to provide data-driven, real-time biomechanical feedback.

Projects

Steve the Freakysaur — Sep 2025

- Built a Chrome Dino–style game controlled hands-free with real-time tongue detection using a segmentation model on webcam input.
- Prototyped in Pygame and later ported to the web with Next.js and TypeScript; awarded 1st place (out of 124 participants, 50+ projects) at the Daydream Game Jam, BC's largest youth hackathon and the biggest Daydream event in North America.

Founder & Developer | *STEMsf.org* — Sep 2025 – Present

- Founded a non-profit to promote STEM education, developing its web platform with React, TypeScript, and Firebase, including a secure portal with role-based access control.
- Manage a team of 7 executives across 2 chapters to coordinate outreach and plan educational workshops.

Technical Author | *Amazon Bestselling Books* — Aug 2025

- Authored two programming guides, *Python FastStart* and *Swift FastStart*; the latter achieved #1 Bestseller status in App Development and ranked Top 50 in the Artificial Intelligence category on Amazon.

Education

Port Moody Secondary School – IB Diploma Candidate — Port Moody, BC

Expected Graduation: June 2027

- **Academics:** 4.0 GPA (97.1% average), Rank: 2/300. Pursuing IB Higher Levels in Math AA and Physics.
- **Standardized Tests:** SAT 1530 (790 Math, 740 English).
- **Certifications & Coursework:** Deep Learning Specialization (Coursera), Google UX Design Specialization (Coursera), Linear Algebra & Multivariate Calculus (Imperial College London).