

# Diwen Huang

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## Technical Skills

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

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

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

## Experience / Research

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**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 12,000+ downloads and ranking #1 in Taiwan (Sports) and #2 in Vietnam (Sports) on the App Store through a viral campaign that generated 1M+ views.
- Currently spearheading the expansion to Android, leading development of a cross-platform app with React Native and Kotlin, and porting the vision models using the ONNX format for on-device inference.

**Freelance Software Engineer** | *Self-Employed*

Aug 2025 – Present

- Partner with a diverse clientele of small businesses, non-profits, and individuals to translate their requirements into functional specifications and project roadmaps.
- Engineer and deploy full-stack web applications using modern frameworks like React and Next.js, resulting in improved online presence and user engagement for clients.

**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

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**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.

**Regen**

Jan 2025

- Developed an AI-powered website using HTML, CSS, and the Gemini API to generate custom-tailored recipes from food photos.
- Awarded 2nd place in a Vancouver hackathon for its innovative application of generative AI.

## Education

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**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).