

# NG PIN CHUEN

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**Target:** Robotics Hardware/Embedded Intern (Mechatronics, Integration, Embedded Control)

## SUMMARY

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NTU Mechanical Engineering undergraduate (expected Jun 2026) focused on robotics hardware integration and embedded control. Built Arduino systems with IMU-based heading (yaw) estimation and PWM servo actuation for real-time control; experience in PID tuning (GA/PSO) and uncertainty-aware ML modeling (BNN).

## ROBOTICS HIGHLIGHTS

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- Implemented IMU data acquisition (I2C) and heading (yaw) estimation for closed-loop control on a mobile platform.
- Controlled sail angle using a PWM servo with a heading-to-sail mapping to improve trajectory stability under wind disturbances.
- Applied optimization/learning for control: GA/PSO-based PID tuning and FNN mapping for faster adaptive tuning.

## EDUCATION

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**National Taiwan University (NTU)** — B.S. in Mechanical Engineering  
GPA: 3.91 | Department Rank: Top 18%

Expected Jun 2026

## SKILLS

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**Embedded:** Arduino, C/C++ (embedded), serial debugging, real-time control loop

**Sensors/Actuators:** IMU (acc/gyro), heading/yaw estimation, I2C; Servo (PWM duty cycle)

**Control/Optimization:** closed-loop control, PID tuning; Genetic Algorithm (GA), PSO

**Programming/Data:** Python, R, data preprocessing, visualization, PDF report generation

## EXPERIENCE

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**SHL Medical** — Engineering Intern

Aug 2025

- Built an internal Gage R&R tool in R (data input workflow, visualization, automated PDF reporting) to replace Minitab licensing.
- Developed a Bayesian Neural Network (BNN) to predict auto-injector injection time from engineering features (volume, density, viscosity, concentration, temperature, spring stiffness) with uncertainty quantification.

## SELECTED PROJECTS

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**Wind-Powered Vehicle (Course)** — Team Lead (5 members)

[2025]

- Implemented Arduino control system; integrated IMU via I2C for heading (yaw) estimation.
- Mapped heading to sail angle and controlled sail via PWM servo; iteratively tuned mapping/thresholds through track testing.

**Medical Robotic System (Lab, Prof. Hao-Ming Hsiao)** — Adaptive PID Tuning

[2022–2025]

- Tuned PID using GA and PSO across varying conditions; identified scalability limits of per-condition reruns.
- Trained an FNN to map input conditions to PID parameters for faster adaptive tuning.

## ADDITIONAL

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- Anti-Fraud LINE Chatbot: 3rd Place, 2025 International Generative AI Innovative Application Competition.
- BudgetAI: expense logging (text/voice/image), budget-aware recommendations, monthly analytics.

## LEADERSHIP & LANGUAGES

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Malaysian Students' Association: Committee Member (1 year).;  
Chinese (Native), English (Fluent), Malay (Fluent)