Paing Hein Htet

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EDUCATION

University College London, MEng Biomedical Engineering *Sept 2025 – Jun 2029*

First-year result: First Class. Second year in progress.

A-Levels (2025): A* Mathematics, Further Mathematics, Physics, Chemistry; A Biology. **IGCSE** (2023): Grade 9 in all nine subjects.

PUBLICATIONS & PREPRINTS

Duplicate leakage in a public conjunctival pallor benchmark, and an honest baseline for image-based anaemia screening

Preprint. Htet, P. H. (2026). Zenodo. doi.org/10.5281/zenodo.22782147. Sole author; analysis code and duplicate detector at github.com/Pai-88/pallor-hb

- Showed 710 records in a published clinical image dataset are really 383 photographs; duplicates crossed sites and carried conflicting labels, so grouping folds by site, the standard safeguard, still left two-fifths of a **+0.176** AUROC inflation in place.
- Corrected baseline: AUROC **0.706** (95% CI 0.653–0.757); every number regenerated by script and verified automatically (68 claims); code and detector released.

PROJECTS

PURSUIT-1: Person-Following Quadcopter *2026*

- Designed a 4-layer flight-controller board from a Python circuit description; all checks passed; fabrication files released.
- Wrote the ESP32-S3 flight firmware: sensor fusion, cascaded PID, motor mixing and failsafes, validated on the bench.
- Camera pipeline for detection, tracking and face recognition: **0 false accepts in 24,110 impostor faces**; 369 tests.

KiCad, SKiDL, Freerouting, ngspice, Python, C++, ONNX Runtime, OpenCV, PlatformIO.

EIT-16CH: Electrical Impedance Tomography Instrument *2026*

- Designed a 16-electrode 4-layer measurement board, 104 components, DRC clean and released for fabrication.
- Compared learned and classical image reconstruction in simulation, establishing the noise regime where the learned method wins: below 40 dB.

KiCad, Freerouting, ESP32-S3, PlatformIO, PyTorch, NumPy, pyEIT.

Airlift Photobioreactor Controller *2026*

- Designed a 2-layer ESP32-S3 controller for a 1 L algae culture; fitted a growth model and optimised the light schedule: simulation predicts **+21%** biomass at equal energy.

KiCad, ngspice, CadQuery, Python, PlatformIO.

RL Car: Uncertainty-Aware Autonomous Racing *2026*

- Built a reinforcement-learning racer that estimates its own epistemic uncertainty and slows when a sensor is blinded.
- Showed uncertainty must be estimated on a forward model, not the policy: the policy-space ensemble scored **AUROC 0.127**, anti-correlated, on a blinded sensor.
- Wrote a Navier–Stokes solver from scratch for the body aerodynamics and validated it against published cylinder-flow benchmarks.

Python, NumPy, SciPy, bootstrap ridge regression, random Fourier features; FreeCAD, gmsh, CalculiX.

RESEARCH

Surgical video segmentation, with Dr Sophia Bano, UCL Computer Science *from Oct 2026*

Oral cancer detection with deep learning, with Dr J. W. Asare, UENR, Ghana *2026 – present*

WORK EXPERIENCE

Healthcare Assistant (internship), Grand Mandalay Hospital, Mandalay, Myanmar *Jan 2025 – Jun 2025*

- Supported ward staff with patient care and observations across six months on the wards. That experience directed my work towards machine learning for clinical care.

TECHNICAL SKILLS

Languages: Python, C, C++, MATLAB, SQL.

Statistics: bootstrap confidence intervals, DeLong test, Hosmer–Lemeshow calibration, expected calibration error, Brier score, Bland–Altman agreement, decision curve analysis, grouped cross-validation.

Machine learning: epistemic uncertainty via bootstrap ensembles and random Fourier features, out-of-distribution detection, model calibration, evaluation design and leakage control, reinforcement learning, gradient boosting; scikit-learn, PyTorch.

Deep learning and vision: MLP, CNN, RNN and LSTM, Transformers and ViT, autoencoders; DETR, YOLO, OpenCV, ONNX Runtime, CoreML; detection, tracking, face recognition.

LLMs and agents: Anthropic API, tool use, MCP, multi-step agents, Hugging Face Transformers, Whisper, smolagents.

Data science: pandas, NumPy, SciPy, Matplotlib, Tableau; data cleaning, deduplication and dataset-integrity auditing, reproducible analysis pipelines.

RL and signals: MuJoCo, policy training, domain randomisation, model ensembles; EMG, PPG and Wi-Fi channel-state processing.

Electronics: 2- and 4-layer PCB layout, analog front ends, power; KiCad, SKiDL, LTspice, ngspice; SMD soldering, ESP32-S3, RP2040.

CAD and laboratory: Fusion 360, SolidWorks, CadQuery, 3D printing, Git, LaTeX; aseptic technique, cell passaging, Instron tensile testing.