

Project: Quantum machine learning models for biomedical time-series: applications to ECG signal processing

A Ministry of Education (Taiwan) TEEP internship project recruitment information

June 11, 2026

Project details

This project aims to develop a benchtop prototype of a low-cost, embedded system for real-time ECG anomaly detection. The system is designed as a proof-of-concept to evaluate the feasibility of deploying quantum-inspired machine learning models on ultra-low-power microcontrollers (TinyQML). The device captures a single-lead ECG signal, performs onboard signal processing, and executes a lightweight, simulated variational quantum classifier to detect anomalies in time-series data. The system generates real-time alerts upon detecting abnormal heart rhythms.

The intern will participate in algorithm development, software implementation, embedded deployment, and performance evaluation of TinyQML models for ECG signal classification.

The intern will gain practical, hands-on experience in the rapidly emerging intersection of quantum machine learning and embedded systems. Outstanding contributions to the algorithm development and prototype evaluation may lead to opportunities for co-authorship on peer-reviewed scientific publications and continued collaboration with the lab.

Required qualifications

1. Strong proficiency in Python and C programming.
2. Familiarity with microcontroller and embedded system architectures.
3. Solid understanding of classical machine learning fundamentals, including model training, evaluation, and optimization.
4. Good background in quantum information and quantum computing concepts, including variational quantum algorithms.
5. Experience using quantum computing frameworks such as Qiskit or PennyLane.

Preferred qualifications

1. Experience deploying machine learning models on resource-constrained or embedded hardware.
2. Experience with biomedical signal processing and understanding of electrocardiogram (ECG) signals.
3. Ability to implement and evaluate algorithms from research literature.

Internship details

- **Internship duration:** 4 months
- **Stipend:** NTD 17,500 per month
- **MOE TEEP program information:** <https://teep.studyintaiwan.org>
- **Chang Gung University TEEP program information:** <https://www.cgu.edu.tw/oia/Contents?nodeId=19082>

How to apply

Please submit your curriculum vitae, academic transcripts, and a brief cover letter detailing your background in classical machine learning and quantum computing to quantum.lab.cgu@gmail.com. Applications will be reviewed on a rolling basis, so early submission is encouraged. The deadline to apply is August 31, 2026.

Contact information

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TEEP program website: <https://teep.studyintaiwan.org/program/1740>

CGU TEEP information: <https://www.cgu.edu.tw/oia/Contents?nodeId=19082>