

Dear Organizing Committee for the Hong Kong Laureate Forum,

I am pleased to nominate Mr. Ho Felix Leong for the Hong Kong Laureate Forum. Mr. Leong will be an undergraduate in the upcoming September this year at the Hong Kong University of Science and Technology.

I have had the privilege of knowing Mr. Felix Leong for over two years during his high school years, both as his physics teacher and as his advisor in various prestigious mathematical modeling competitions, including the Mathematical Contest in Modeling (MCM), the Interdisciplinary Contest in Modeling (ICM), the International Mathematical Modeling Challenge (IMMC), and the High School Mathematical Contest in Modeling (HiMCM).

In the realm of mathematical modeling, Felix has excelled. He has consistently demonstrated exceptional intellectual curiosity and a strong academic foundation in physics. His achievements in complex problem-solving reflect both his solid understanding of physical principles and his advanced skills in mathematics. Felix is particularly proficient in physics and mathematics. His self-motivation to explore advanced topics and his commitment to self-directed learning are indicative of his passion for the sciences. Moreover, Felix is proficient in written English, which has enabled him to effectively communicate his ideas in scientific and academic writing.

Felix's passion for physics and mathematics, coupled with his resilience and self-discipline, makes him an outstanding candidate for the Hong Kong Laureate Forum. I am confident that he will continue to make meaningful contributions to the field and thrive in the stimulating academic environment of the Forum.

Should you have any further inquiries regarding Mr. Ho Felix Leong's application, please feel free to contact me via email at weishan_lee@yahoo.com.

Sincerely,
Wei Shan Lee



Physics Teacher
Pui Ching Middle School, Macao

1. Full Name: Ho Felix Leong
2. Email: leonghofelix@gmail.com
3. Current academic stage or position: High school student/undergraduate
4. Past/current affiliated university/institution: Macau Pui Ching Middle School/Hong Kong University of Science and Technology (BSc in Science (Group A) | Extended Major in Artificial Intelligence, Hong Kong University of Science and Technology)
5. Full Resume

Objective

Incoming HKUST Physics undergraduate passionate about quantum computing and mathematical modeling, seeking to contribute to interdisciplinary scientific dialogue through the Hong Kong Laureate Forum."

Education

- **Hong Kong University of Science and Technology (HKUST)** *Expected Graduation: 2029 | Commencing: September 2025* BSc in Science (Group A) | Extended Major in Artificial Intelligence
Hong Kong SAR, China

- Academic Focus: Physics (Primary), Mathematics (Secondary), AI Applications in Scientific Research

- Relevant Coursework:

Physics: Classical Mechanics, Electrodynamics, Quantum Physics Fundamentals
Mathematics: Multivariable Calculus, Linear Algebra, Differential Equations

AI/Computational: Machine Learning for Physics Simulations, Numerical Methods, Python for Scientific Computing

- Extended Major Highlight:

Integrating AI techniques (e.g., neural networks) with physics modeling (e.g., quantum system optimization).

- **Pui Ching Middle School, Macau** *2019 - 2025*

Secondary Education Macau SAR, China

- Academic Engagement:

Physics Modeling Group (2022 - 2024)

Robotics Competition Training (Project-Based) Programming Course (2020 - 2023)

Academic Achievements & Competitions

- **The 10th Annual International Mathematical Modeling Challenge The Regional Contest of Greater China 2024**

Finalist (International) ≤ 7% of total teams

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Finalist (International) ≤ 7% of total teams

- The 9th Annual International Mathematical Modeling Challenge The Regional Contest of Greater China 2023

Meritorious (International) ≤ 12% of total teams

- The 9th Annual International Mathematical Modeling Challenge The International Contest of Greater China 2023 Honorable Mention (International) ≤ 24% of total teams

- 2023 High School Mathematical Contest In Modeling 2023

Honorable Mention (International) ≤ 26% of total teams

Research & Project Experience

International Mathematical Modeling Challenge (IMMC) | International Finalist (Top 7%)

2024 *Machine Learning for Household Pet Adoption Suitability Analysis*

- Designed & implemented decision tree model using Python/scikit-learn, achieving 92% accuracy with precision-tuned hyperparameters.
- Engineered key features: living space quantification, allergy impact scoring, and pet experience metrics using Pandas/NumPy.
- Conducted comparative analysis of logistic regression/SVM models, selecting decision tree for optimal interpretability.
- Developed automated data pipeline: missing value imputation, feature scaling (StandardScaler), and cross-validation.
- **Outcome:** Ranked top 70/1000 teams globally through rigorous model evaluation (F1-score = 0.89). 2024 *Fair Resource Allocation System via MILP Optimization*
- Architected Mixed-Integer Linear Programming (MILP) model using Python/pulp, maximizing fairness coefficient by 38%.
- Integrated dynamic pricing prediction subsystem with numpy/itertools, enabling real-time market adaptation.
- Visualized allocation patterns using matplotlib, identifying Pareto-optimal solutions through sensitivity analysis.
- Implemented CSV-based I/O system for rapid scenario testing (20+ constraint variations analyzed).

World Educational Robot Contest (WER) | International First Prize

2023 *Autonomous Robot System Design under Resource Constraints*

- Developed low-cost collection mechanism using Lego components, achieving 95% object retrieval reliability.
- Created hybrid navigation system combining grayscale line-following and visual landmark detection.

- Implemented real-time fault diagnosis protocol, reducing competition downtime by 70% during critical rounds.
- **Technical Stack:** EV3 visual programming, sensor fusion techniques, and rapid prototyping methodologies.

Technical Methodologies

Modeling Decision Trees, MILP, Sensor Fusion, Dynamic Systems Analysis

Tools Python (scikit-learn/pulp/Matplotlib), EV3 Robotics Suite, Data Wrangling (Pandas) Process

Cross-validation, Hyperparameter Tuning (GridSearchCV), Real-time System Debugging

Skills

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- **Programming Languages:** Python, MATLAB, C++, LaTeX, MATHEMATICA
 - **Physics & Mathematical Tools:** Advanced Calculus (Self-taught), Quantum Mechanics Simulations, Numerical Analysis, Statistical Modeling
 - **Data Analysis & Scientific Computing:** Python Data Analysis (NumPy/Pandas), MATLAB Simulations, Qiskit (Quantum Computing), OriginLab
 - **Research & Academic Skills:** Physics Proficiency, Experimental Design, Academic Writing, Technical Report Composition
 - **Problem Solving & Leadership:** Critical Problem Solving (IMMC/HIMCM), Team Leadership, Interdisciplinary Collaboration, Scientific Presentation
 - **Specialized Areas:** Theoretical Physics Modeling, Robotics Algorithms, Differential Equations, Chaos Theory Applications
 - **Learning Competencies:** Self-directed Learning, Mathematical Intuition, Computational Thinking, Creative Problem Reformulation