# KEA KIMLEANG

Master Graduate - Computer Science & AI Convergence

## CONTACT


- kimleang.rscher@gmail.com
- kkimleang.com
- Kea-Kimleang
- KimleangSama
- Kea-Kimleang
- 45 Yongso-ro, Nam-gu, Busan, 48513, South Korea
- +82 10 2945 9808


## SKILLS

- **Web Development** 5+ yrs
- **Mobile Development** 2+ yrs
- **Software Teaching** 2+ yrs
- **Internet of Things** 1+ yrs
- **Machine Learning** 2+ yrs
- **Quantum Computing** 2+ yrs
- **Quantum ML** 1+ yrs

## EDUCATION

**M.S. - Artificial Intelligence Convergence** — **2022 - 2024**
**Pukyong National University - Busan, South Korea**

Achieved a Master Degree with 4.215 of 4.5 GPA. Working 2.5 Years on machine learning, quantum algorithms, and quantum machine learning with a thesis "A Study of Quantum Approximate Optimization Algorithm for Knapsack Problem in Electric Vehicle Charging Scenarios."

**B.S. - Computer Science & Engineering** — **2016 - 2020**
**Royal University of Phnom Penh - Cambodia**

Achieved a GPA of 3.8 out of 4. Strong understanding of computer science fundamentals including algorithms, data structures, and software engineering. Proficient in programming languages such as Java, Javascript, Python, and database technology.

**A Year Training - Software Development** — **2019 - 2020**
**Korea Software HRD - Phnom Penh, Cambodia**

Completed with *A* Grade. Comprehensive of web development and iOS application technology. Developed analytical and problem-solving skills through coursework and projects.

## WORK EXPERIENCE

**Research Assistant** — **2022 - 2024**
**Pukyong National University, Busan, South Korea**

Researching on machine learning applied to time series data and electric power steering systems, embedded system, quantum algorithms, and quantum machine learning. Additionally, development of a fully web application tailored for intuitive utilization in quantum machine learning development. Actively engaged in machine learning algorithms and applications development, complemented by extensive research academic writing resulting in a several of research papers.

**IT Instructor** — **2020 - 2022**
**Korea Software HRD Center, Phnom Penh**

Teaching courses of web application development with ReactJS and Angular technology, iOS mobile development, DevOps, and Spring Boot framework for backend development, providing students insights into modern fullstack development practice. Moreover, also seamlessly managing HRD registration websites, infrastructure servers, and domain name setups for website online presence.

**Java Developer** — **2018 - 2019**
**IT Solution Company, Phnom Penh**

Developing desktop application using Java GUI for user interaction. Making connection of the application with Salesforce CRM integration.

# ACHIEVEMENTS

**Korea Software HRD Center**

**Web and Mobile Development**

Ranked among the top students throughout the courses.

**DevOps Engineering**

**DevOps for both Backend and Frontend Environments**

Several certifications offered by Udemy platform, facilitating fundamental proficiency using DevOps technology.

**Conference and Presentation**

**Delivering both Face-to-Face and Online Presentations**

Delivering the engaging oral presentations to the audiences, both small and large audiences as well as online presentations.

# PROJECTS

**Quantum Machine Learning Software Stack** — **2023 - 2024**
**Tool: Web Development, Quantum Computing**

A comprehensive full-stack development methodology is utilized to design and explore diverse quantum machine learning applications. This software offers a distinctive strategy for refining quantum machine learning tailored to building models within financial, logistics, and optimization algorithms. Additionally, a programmable web interface is available, offering support for integrating IBM Qiskit quantum software code into a quantum assembly language, facilitating execution across multiple quantum simulators. This tool leverages software frameworks such as Qiskit, PennyLane, and Python for machine learning integration.

**Micro-display Controller Design** — **2022 - 2023**
**Tool: Embedded System, FPGA, Machine Learning**

A virtual reality hardware design leveraging embedded hardware with FPGA technology to optimize the adaptive foveated rendering algorithm. This approach optimizes hardware resources by allocating high computational power specifically only to users' eye gaze location, thereby it is reducing overall resource consumption significantly.

**Distributed Power Controller Management** — **2022**
**Tool: Web Development**

An advanced web application showcasing installed sensors throughout South Korea. It is offering listing, controlling, detection, management, and visualization of both healthy and abnormal sensor data with a seamless web application interface.

**HRD Course Projects** — **2019 - 2020**
**Tool: Web and iOS Development**

A Financial Report web app with beautiful yet informative graphs and an iOS Forum application for users to seamlessly engage in discussions.

# PUBLICATIONS

**A Hybrid Quantum-Classical Model for Stock Price Prediction Using Quantum-Enhanced Long Short-Term Memory** — **Under Review**
**Quantum Information Processing, 2024**

Authors: **Kimleang Kea**, Dongmin Kim, Chansreynich Huot, Professors: Tae-Kyung Kim, and Youngsun Han
Status: Under Review

**Enhancing the Classical Convolutional Autoencoder with the quantum technique, Quantum Approximate Optimization Algorithm, for Image Noise Reduction** — **Under Review**
**ScienceDirect Neurocomputing, 2024**

Authors: **Kimleang Kea**, Professors: Won-du Chang, Hee Chul Park, and Youngsun Han
Status: Under Review

**Multiple Sensor-based Adaptive Foveated Display Control for Enhanced Computational Efficiency of Virtual Reality Devices** — **Under Review**
**KSII TIIS, 2024**

Authors: **Kimleang Kea**, Professors: Youngsun Han, and Tae-Kyung Kim
Status: Under Review

**A Federated Learning Approach Efficient Anomaly Detection in Electric Power Steering Systems** — SCIE - IF 3.9
**IEEE Access, 2024**

Authors: **Kimleang Kea**, Professors: Youngsun Han, and Young-Jae Min
Status: Accepted and Published

**Leveraging Knapsack QAOA Approach for Optimal Electric Vehicle Charging** — SCIE - IF 3.9
**IEEE Access, 2023**

Authors: **Kimleang Kea**, Chansreynich Huot, and Prof: Youngsun Han
Status: Accepted and Published

**Enhancing Anomaly Detection in Distributed Power Systems AutoEncoder-based Federated Learning** — SCIE - IF 3.7
**PloS One, 2023**

Authors: **Kimleang Kea**, Professors: Youngsun Han, and Tae-Kyung Kim
Status: Accepted and Published

**A Deep Learning Approach to Detect Anomalies in an Electric Power Steering System** — SCIE - IF 3.847
**MDPI Sensors, 2022**

Authors: Alabe, Lawal Wale, **Kimleang Kea**, Professors: Youngsun Han, Young-Jae Min, and Taekyung Kim
Status: Accepted and Published

## WORKSHOPS & CONFERENCES

**International Conference on Green and Human Information Technology** — Jan 2024
**Le Quy Don Technical University, Hanoi, Vietnam**

Paper: Leveraging Dynamic Zoom-in Technique for Enhanced Object Detection in Foveated Images

**International Conference on Quantum Techniques in Machine Learning** — Nov 2023
**CERN, Geneva, Switzerland**

**International Conference on Consumer Electronics Asia 2023** — Oct 2023
**Paradise Hotel Busan, Busan, South Korea**

Paper: The Accelerating of YOLO-based Real-time Object Detection via Foveated Rendering

**International Conference on Systems, Programming, Languages, and Applications: Software for Humanity, OOPSLA Track** — Dec 2022
**University of Auckland, Auckland, New Zealand**

## LANGUAGES

- **Cambodian**: Native language.
- **English**: Proficient in Speaking, Listening, Reading, and Writing.
- **Korean**: Poor in Speaking, Listening, Reading, and Writing.