Willmer Rafell Quiñones Robles

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Research Interest

Developing and applying deep learning-based systems to assist and to improve the fields of healthcare, visual recognition, and cognitive science.

Keywords: AI for Healthcare, Deep Representation Learning, Self-Supervised Learning, Cancer Image Analysis, Knowledge Engineering

Education

Ph.D., Graduate School of Data Science

Korea Advanced Institute of Science and Technology (KAIST) • Advisor: Mun Young Yi Feb 2020 – Feb 2025

- Area of Study: Machine Learning in Healthcare, Deep Learning for Computer Vision, Self-Supervised Learning
- Thesis: Spatial Context-Driven Approach for Efficient Cancer Classification in Whole-Slide Images

M.S., Graduate School of Knowledge Service Engineering

Korea Advanced Institute of Science and Technology (KAIST) • Advisor: Mun Young Yi Feb 2018 – Feb 2020

- Area of Study: Machine Learning in the Healthcare field, Deep Learning for Computer Vision
- Thesis: Impact of Cancer Histopathological Image Preprocessing on Convolutional Neural Network Performance: A Sensitivity Analysis

B.S., Electronic and Communication Engineering

Santo Domingo Institute of Technology (INTEC) Feb 2011 – Aug 2014

- Graduated with Honors • GPA 3.55 / 4

Professional Experience

Knowledge Innovation Research Center (KIRC) @ KAIST **Daejeon, South Korea**

Research Assistant Mar 2018 – Feb 2025

- **Diagnostic Pathology using Deep Learning** • Develop Deep Learning models to automatically diagnose abnormalities on histopathology images.

Santo Domingo Institute of Technology (INTEC) **Santo Domingo, Dominican Republic (Remote)**

Course Instructor Feb 2021 – Oct 2024

- Served as the instructor for undergraduate courses, including Introduction to Artificial Intelligence, Artificial Intelligence, and Deep Learning.

Dominican Electrical Transmission Company (ETED) **Santo Domingo, Dominican Republic**

SCADA System Engineer Feb 2015 – Jan 2018

- Managed the Supervisory Control and Data Acquisition system that covers all the electrical transmission power lines in the Dominican Republic

Publications

Quinones, W. R., Ashraf, M., & Yi, M. Y. (2021, December). Impact of Patch Extraction Variables on Histopathological Imagery Classification Using Convolution Neural Networks. In 2021 International Conference on Computational Science and Computational Intelligence (CSCI) (pp. 1176-1181). IEEE.

Ashraf, M., **Quinones, W. R.**, Kim, M., Ko, Y. S., & Yi, M. Y. (2022). A loss-based patch label denoising method for improving whole-slide image analysis using a convolutional neural network. Scientific reports, 12(1), 1392.

Ko, Y. S., Choi, Y. M., Kim, M., Park, Y., Ashraf, M., **Quiñones Robles, W. R.**, ... & Yi, M. Y. (2022). Improving quality control in the routine practice for histopathological interpretation of gastrointestinal endoscopic biopsies using artificial intelligence. Plos one, 17(12), e0278542.

Kim, M., **Quiñones Robles, W. R.**, Ko, Y. S., Wong, B., Lee, S., & Yi, M. Y. (2024). A predicted-loss based active learning approach for robust cancer pathology image analysis in the workplace. BMC Medical Imaging, 24(1), 5.

Under Review Papers

Quinones, W. R., Noree, S., Ko, Y. S., & Yi, M. Y. (2024). Artificial Class Activation Maps using Fractals: A New Data Augmentation Strategy for Deep Learning-based Whole-Slide Image Analysis. Under Review

Research Projects

Diagnostic Pathology using Deep Learning • Funded by Seegene, Inc **Mar 2018 – Feb 2025**

- Develop a vision test model to automatically find patient abnormalities on histopathology images based on deep learning algorithms.

Teaching Experiences

TA @ KAIST, Scientific Writing for AI • Remote **Aug 2024 – Dec 2024**

- Attendee: Graduate Students of the Graduate School of Artificial Intelligence, KAIST

TA @ KAIST, Scientific Writing • Remote **Feb 2024 – Jun 2024**

- Attendee: Graduate Students at KAIST

Lecturer @ INTEC, Introduction to Artificial Intelligence • Remote **Feb 2021 – Apr 2024**

- Teaching general topics of Artificial Intelligence
- Attendee: Undergraduate Students at Santo Domingo Institute of Technology (INTEC)

Lecturer @ INTEC, Introduction to Deep Learning • Remote **Aug 2022 – Oct 2022**

- Teaching introductory topics of Deep Learning
- Attendee: Undergraduate Students at Santo Domingo Institute of Technology (INTEC)

Lecturer @ INTEC, Artificial Intelligence • Remote **May 2024 – Oct 2024**

- Teaching Artificial Intelligence focused on Software Engineering
- Attendee: Undergraduate Students at Santo Domingo Institute of Technology (INTEC)

Skills & Others

Programming: Python, R, Matlab, C / C++
Technology: PyTorch, TensorFlow, Linux
Languages: Spanish (Native), English (Professional), Korean (Basic)

Scholarship

Full Academic Scholarship, KAIST **Feb 2018 – Feb 2024**
$ 1,500 per year

Global AI & Big Data Scholarship Program, Daewoong Foundation **Jul 2021 – Oct 2021**
$ 500 per month

Global AI & Big Data Scholarship Program, Daewoong Foundation **Jan 2021 – Apr 2021**
$ 1,000 per month

KAIST-KOICA-MESCYT Project **Feb 2018 – Feb 2020**
$ 9,600 per year

Professional References

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