

# ASAD RAZA

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## EDUCATION

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**City University of Hong Kong, Hong Kong** *September 2017 - Present*

Bachelor of Science, Computing Mathematics (Minor in physics), Year 3

Relevant Coursework: Quantum Mechanics (graduate level), Machine Learning, Data Structures and Algorithms, Real Analysis, Differential Equations (Ordinary and Partial), Linear Algebra, Discrete Math, and Calculus (single and multi-variable).

## WORK EXPERIENCE

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**City University of Hong Kong, Hong Kong** *June 2018-Present*

*Quantum Machine Learning Research Assistant*

- Investigating how the accuracy of Quantum Neural Networks (QNNs) scales in noisy (real quantum computers) and noiseless (quantum simulators) environments.
- Analyzed pulse sequences of qubits using Deep Reinforcement Learning in TensorFlow that outperformed the state-of-the-art methods: Krotov and Stochastic Gradient Descent.

**Entropica Labs, Singapore** *June 2019-August 2019*

*Quantum Machine Learning Intern*

- Utilized 1-3 layered Deep Neural Networks in Pytorch to classify the cluster type with 98% accuracy based on the optimal ansatz for Quantum Approximate Optimization Algorithm (QAOA) when solving clustering problems using MAXCUT on complete graphs.
- Built Linear Regression (multi-variate and multi-target) and Logistic Regression models that gave accuracy as high as 97% on QAOA parameter data sets.

**Edvant Company Ltd, Hong Kong** *May 2018-August 2018*

*Software Engineering Intern*

- Developed front and backend of mobile application using React Native and NodeJS in JavaScript.
- Leveraged IBM Watson Visual Recognition API to integrate image classification of marine species.

## PUBLICATIONS

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Xiao-Ming Zhang, Zezhu Wei, **Raza Asad**, Xu-Chen Yang, Xin Wang. "When reinforcement learning stands out in quantum control? A comparative study on state preparation". *npj Quantum Information*  
<https://www.nature.com/articles/s41534-019-0201-8>

## TECHNICAL STRENGTHS

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**Programming Languages & Software:** Python (expert), Bash (proficient), MATLAB (proficient), Java (prior experience), JavaScript (prior experience), R (elementary fluency).

**Libraries & Frameworks:** Pytorch, Numpy, Scikit-learn, Matplotlib, Seaborn

## ACCOMPLISHMENTS

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Worked on color and object detection for autonomous underwater robot that became the finalist for Singapore AUV Challenge *March 2018*

Top 27 in entire Pakistan for International Physics Olympiad. *March 2017*