# Question 1: Introduction and Computer Skills

Mahkame Salimi Moghadam

September 30th, 2024

**Question 1.** Provide briefly information about your computer skills (e.g., familiarity with different operating systems and programming languages) and describe briefly the kind of research you are or will be doing at UCalgary. If your project is still undefined, then describe your research aspirations and how they align with the research carried out in the group you are part of. Write if your research involves data analysis and which data analysis methods you are expected to learn. (1 point)

**Answer:**

I am Mahkame Salimi, a PhD student in Barry Sanders' group, working on flood prediction using quantum machine learning. I have experience in machine learning, particularly with Python libraries such as Keras, Scikit-learn, TensorFlow, SciPy, NumPy, QuTiP, and Qiskit, as well as PennyLane for quantum simulations. Additionally, I have worked with linear algebra packages in MATLAB and have conducted simulations using Mathematica. I also have a background in C++, C, and Java.

My project involves regression, classification, and developing models for parameter optimization and dimensionality reduction. I hope to learn methods like Principal Component Analysis (PCA) in this class to assist with my research.

In my research, we will analyze the image data of land across different regions of Canada to predict the frequency of flooding events. Based on these predictions, we will apply quantum machine learning methods to evaluate their advantages and determine how quantum computing can improve the precision and speed of flood predictions. Our goal is to assess the utility of quantum techniques in achieving more accurate and efficient predictions compared to classical methods.