

## **Title: Quantum Computing for the Near Future**

### **Abstract:**

In the near future, it is possible that quantum devices with 50 or more high quality qubits can be engineered. On one hand, these quantum devices could potentially perform specific computational tasks that cannot be simulated efficiently by classical computers. On the other hand, the number of qubits would not be enough for implementing textbook quantum algorithms. An immediate question is how one might exploit these near term quantum devices for really useful tasks? In addition, one may also expect that these powerful quantum devices are accessible only through cloud services over the internet, which imposes the question of how might one verify the server, behind the internet, does own a quantum computer instead of a classical simulator? In this talk, I will share my thoughts over these questions based on my recent works.