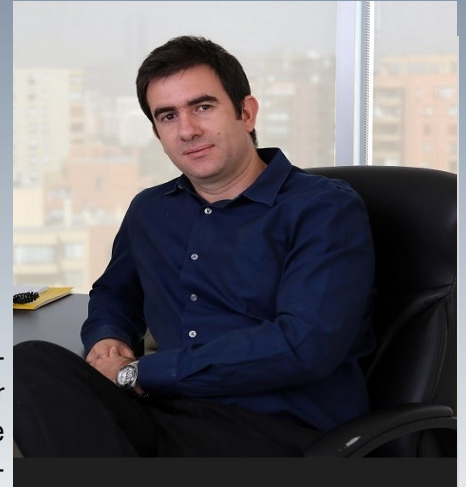


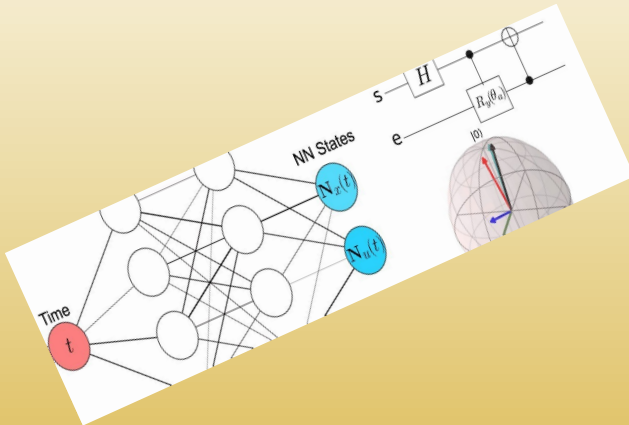
# "Artificial Intelligence meets Quantum"

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Florida International University

**February 23, 2024**  
**11:00 AM — 12:30 PM**  
**EC 3930**



**Abstract:** This talk will provide an overview of the ubiquitous field of artificial intelligence, the growing field of quantum computers, and their intersection, quantum machine learning. This new branch harnesses the combined potential of its predecessors to unlock groundbreaking applications. We will briefly introduce the paradigms of AI and fundamental concepts around it. We will discuss about algorithms that learn and make decisions based on data, as well as neural networks that are data-free, that is, learn from models. Quantum computers leverage the intricate features of the quantum realm to perform complex calculations. We will revisit the development of this field and the challenges involved to deliver a robust quantum computer. From an engineering perspective, we will learn about the quantum hardware that empowers quantum computers, such as: superconducting qubits, cold atoms, and photonic systems. Finally, I will showcase the benefits and possible applications for quantum machine learning models, that are, in general, hybrid models that combine the best features of each part. We will uncover applications that range from statistical learning with quantum kernel methods and variational quantum circuits to time series analysis for critical behaviors. By the end of the lecture attendees will gain a better understanding of the intricacies of these fields.



**Biography:** I finished my Ph.D. in physics at the Pontifical Catholic University of Chile. My research mainly focused on quantum information science, with particular attention to cavity QED systems and color centers in diamond. Moreover, I have developed methods for quantum control and quantum sensing. As the director of the DAiTA Lab research center at Universidad Mayor, I refocused my attention on AI, including machine learning, deep learning and quantum machine learning. Over the past six years I have been working with machine learning

models, physics-informed neural nets, kernel-based quantum machine learning and variational quantum circuits. I am currently an adjunct professor at Florida International University, and I plan to continue with my research in these areas.

Attend Via Zoom: <https://fiu.zoom.us/j/84964832792?pwd=eTdkUHhpUDhIZHgzNXdEQmdOOEZtQT09>

Meeting ID: 849 6483 2792

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