

Master Thesis Topic: Quantum Computing in Process System Engineering: Application of Machine Learning in Process Design

WHAT?

- Integrating Quantum Computing into Process Design and Optimization.

HOW?

- Introducing an automated interface between Aspen Plus and Activity Browser to streamline Life Cycle Assessment (LCA).
- Incorporating Support Vector Machine (SVM) metamodeling for enhanced computational efficiency.
- Implementing Quantum-Enhanced Reinforcement Learning algorithms to speed-up simultaneous multiple scenarios testing while enhancing decision-making processes.

WHY?

- Improving accuracy and efficiency in decision-making for optimal operating conditions.
- Demonstrating the superiority of quantum SVM in handling simultaneous multiple scenarios.

Duration: Approximately 6 months, depending on student commitment

Task: Apply and Evaluate Quantum Computing and Machine Learning for Process Design

Skills: Process design, programming language (preferable Python)

Tools: ASPENplus, QC Platforms, ML Frameworks, Python with Scikit-learn and Keras

