Robustness of the In-Plane Data Crossing for Molecular Field-Coupled Nanocomputing

Ms. Giuliana Beretta, PhD Candidate, DET.

The molecular Field-Coupled Nanocomputing is a promising implementation of the Quantum-dot Cellular Automata paradigm for future low-power digital electronics. It encodes the logic information in molecules charge distribution. Thus the electrostatic molecular characteristics play a relevant role in the interaction and consequently influence the functioning of the circuits, opening the way for tailoring molecules and layouts to obtain specific behaviors.

Portfolio Allocation Based on Time Series Analysis

Mr. Jacopo Fior, PhD Candidate, DAUIN.

Selecting stock portfolios involves maximizing long-term returns and minimizing risk. This study adapts Markowitz’s model to consider sets of candidate portfolios rather than individual stocks, reducing complexity and enabling the enforcement of portfolio-level constraints. Furthermore, the study introduces a novel strategy based on time series clustering to enhance stock portfolios diversification.

Study and development of a real-time pilot performance monitoring system

Mr. Gabriele Luzzani, PhD Candidate, DIMEAS.

Two key challenges facing the aviation market today are rising operating costs and the decreasing availability of pilots, pushing for new solutions such as Single Pilot Operations (SPOs). Our project provides an answer in this direction by leveraging the physiological assessment of pilots’ mental workload to guarantee the same safety level in SPOs.