Thesis Title	**Development of a Smart Home Energy Management System Integrating Digital Twins and AI**
Programme of Studies	MSc in Energy Engineering
Course	MEE 540 - MSc Thesis
Area of Study	Computational Building Physics – Smart Buildings
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Semester	Fall Semester 2025
Short Description	This thesis presents the design and development of a smart home energy management system that integrates digital twin technology with artificial intelligence for real-time energy optimization. The system monitors and controls HVAC, lighting, and zone-based energy use through a user-friendly dashboard. AI models analyse real-time and historical data to adapt to user behaviour and environmental conditions. Developed using Python, Flask, and MQTT, the platform supports energy efficiency, reduced emissions, and alignment with EU energy performance and nZEB objectives.