

### **ELEC-E0110 Academic Skills in Master's Studies Spring semester 2022**

This is an optional reference list of completed thesis for the thesis review assignment. The theses listed below have been graded 5 during 2019-2021. According to the thesis statements, they are well-structured and well-written theses with either substantial scientific results or with a solid solution to the research problem through a mature research process. You can take one of these or search any other thesis in the Aaltodocs archive that matches your interest. You can search the below thesis with the title in the Aaltodocs archive. Some of the thesis listed here might not be available as full text thesis. Those thesis are only accessible from certain customer computers at the library on campus.

If you want to know more about how the evaluation criteria is applied eg. for grade 5, discuss with your mentor or later with your thesis supervisor.

### **Master's Programme in Electronics and Nanotechnology**

Phase noise compensation via inter-satellite link for bistatic radar interferometry

Selective area growth of indium arsenide in-plane nanowires

Integrated Circuit Blocks for In-Memory Computing (online)

Distributed beamsteering at millimeter waves for imaging and localization (online)

Thermal characterization of III-V semiconductor core-shell nanowire

Optical thermometry for determining the refractive index of air (online)

Frequency-reconfigurable 8 x 8 MIMO handset utilizing combinatorial feeding (online)

Auroral substorm observations since 1914: latitudinal distribution and energetics (online)

Synthetic Aperture Radar image stacks in support of situational awareness (online)

Improving Radiation Efficiency Using Characteristic Mode Analysis (online)

Programmable Integrated Circuit Design in Context of Analog-to-Digital Converters (online)

Analyzing the characteristic radio variability of AGNs on up to 40 years of 37 GHz data from the Metsähovi Radio Observatory (online)

Reduction mechanism of CO<sub>2</sub> towards methane on Cu(100) with low water coverage investigated with density-functional theory (online)

Electromagnetic beam synthesis from spherical surface electric field distributions using modified Fourier optics method (online)

Temporal Modulation of Resistive Elements for Frequency Response Engineering

Surface wave minimization using spherical wave expansion (online)

### **Master's Programme in Computer, Communication and Information Sciences**

Techno-Economic Analysis of Wireless Connectivity Options in a University Campus  
Neural Network Decoders for 5G Physical Uplink Shared Channel Control Information (online)  
State-Space Virtual Analogue Modelling of Audio Circuits (online)  
Reinforcement Learning Methods for Radar Resource Management  
Radar Waveform Synthesis Using Generative Adversarial Networks  
Multichannel coherent receiver on the RTL-SDR (online)  
Significance of Patterns in Data Visualisations (online)  
Signal Processing in a Semi-Automatic Piano Tuning System (online)  
Effectiveness of Mobility Robustness Optimisation in a Live LTE Network  
Techno-Economic Analysis of Smart Home Hub and Integration Service (online)  
Extending the Functionality of the Realm Gateway (online)  
Enabling Edge Computing Using Container Orchestration and Software Defined Networking (online)  
SphereDiar - an efficient speaker diarization system for meeting data (online)  
Prediction of Patient Deterioration in the Emergency Department using Recurrent Neural Networks  
Evaluating the impact of video game personalization on the player experiences of hardcore and casual players  
Raideliikenteen aiheuttaman runkomelun mallintaminen rakennuksessa (online)  
Effect of Wind on Self-Audition of Human Voice (online)  
On Perceptually Colorless Artificial Reverberation (online)  
Techno-Economic Analysis of Electric Energy Flexibility: Case Study of Aalto University  
Automated Testing and Scoring System for RF-based Drone Detection Systems  
End-to-End Low-Resource Automatic Speech Recognition for Second Language Learners (online)  
Automatic Classification of Vocal Intensity Category from Speech  
User Position-Based Loudspeaker Correction (online)

## **Master's Programme in Automation and Electrical Engineering**

### **Electrical Power and Energy Engineering**

Identifying suitable onshore utility-scale greenfield wind park locations in Finland based on a spatial analysis and optimising site selection using the Analytic Hierarchy Process (online)  
Power System Stability in High Renewable Share Grids (online)

Aggregated Demand Response in a Virtual Power Plant: A Finnish Case Study (online)  
Hajautetun suuntaajakytketyn tuotannon mallintaminen (online)  
Rotor Bar Fault Detection in Induction Machines  
Single-point solar energy systems for low power weather instruments  
Electric vehicle charging combined with load management in commercial buildings (online)  
Suojautuminen sähköverkon häiriön aiheuttamalta vaihekatkoksesta Loviisan voimalaitoksella  
Output Admittance of a Power Converter (online)  
Kolmitasoisen vaihtosuuntaajan tehoasteen simulaatiomallin kehitys  
Kantaverkon relesuojauksen toiminta suurhäiriön jälkeisessä käytönpalautuksessa  
IGBT Structure Function Evaluation Method in Combined Power- and Temperature Cycle Test (online)  
Probabilistic Assessment of Photovoltaic Hosting Capacity in Distribution Networks Considering Varying References and Network Losses  
Maadoitusjärjestelmien laskennallinen tarkastelu (online)  
User-Centered Neighbourhood Services Enabled by Smart Building Technology

### **Control, Robotics and Autonomous Systems**

A hardware and software platform for characterization and prototyping of a low-power energy-harvesting SoC (online)  
Evaluation of Container Technologies for an Embedded Linux Device (online)  
Sensor Fusion for Localization of Automated Guided Vehicles (online)  
Simulating data center cooling systems: data-driven and physical modeling methods (online)  
On Robustness and Smoothness of Optimized Pulse Patterns for Power Conversion Systems  
Visual-Inertial Odometry Aided Temporal Camera Relocalization  
Development of insect production automation: Automated processes for the production of Black Soldier Fly (*Hermetia illucens*) (online)  
Model-Based Reinforcement Learning from Pixels (online)  
Evaluation of physics engines in context of manufacturing simulations  
Autonomous formation of user-specified patterns on a Chladni plate  
Camera-Based Egomotion in a Self-Driving Car (online)  
Next Generation Task Controller for Agricultural Machinery using OPC Unified Architecture (online)

Systemaattiset menetelmät hissiryhmien vyöhyköintivaihtoehtojen analysointiin monikerroksisissa rakennuksissa

Proposing mechanisms to increase the reliability between distributed devices in the IEC61499 Standard (online)

Applying machine learning based soft sensors to a pulp refining process (online)

The effect of curriculum design on movement optimization landscapes (online)

Mobile Human Pose Estimation with Wireless Sensors

CRAS – Autonomous systems

Autonomous overtaking maneuver under complex driving conditions (online)

Interpreting Multivariate Time Series for an Organization Health Platform (online)

Semantic Mapping for indoor robotics (online)

Machine Learning Based Beam Tracking in mmWave Systems

Traceability in the Electronics Manufacturing Industry: A state-of-the-art review and a case study(online)

Acoustic Information for Multisensory Occupancy Detection using Machine Learning

Towards Robust and Deployable Gesture and Activity Recognisers (online)

Modeling and detection of cable collisions for collaborative Cable-Driven Parallel Robots

Privacy-preserving Building Occupancy Estimation via Low-Resolution Infrared Thermal Cameras (online)

### **Electronic and Digital Systems**

Electrical conductivity of the human leg (online)