

ELEC-E0110 Academic Skills in Master's Studies Spring semester 2024

This is an optional reference list of completed thesis for the thesis review assignment. The theses listed below have been graded 5 during 2019-2023. 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 theses are 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 combinatory 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)

Programmatic 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 CO₂ 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)

Surface-mountable dual-polarized antenna arrays for 100 GHz (online)

Design and Verification of an All-Digital Phase-Locked Loop for synchronizing a hard real-time power converter controller (online)

Transparent low voltage current driven thin film electroluminescent displays

Two-channel multiplexing sigma-delta ADC for sensor related applications (online)

Polariton-assisted long-distance energy transfer in two-dimensional layered materials

Dual View Capsule Endoscope Optics with Metallic Mirrors that Can Serve as Loop Antennas for Wireless Power Transfer (online)

Digital-to-analog conversion in wideband digital polar transmitters (online)

Two-Dimensional Materials for Neuromorphic Applications

Wideband Active CMOS Mixer Design for a 60-110 GHz Receiver (online)

Programmatic Design of Time-Based Analog-to-Digital Converter Sub-Blocks (online)

Design and Analysis of a High-Gain and Wide-Band Phased-Array Antenna for V-Band (online)

Deploy Convolution Neural Networks on A-Core: a combined RISC-V processor and in-memory-computing accelerator (online)

Optical second-harmonic generation from niobium oxide dihalides (online)

Implementation and verification of attitude determination control algorithms for a 3U CubeSat (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)

Virtual Bass Enhancement for Distributed Mode Loudspeaker

Graph Error Effect on Graph Neural Networks: Theoretical Bounds

Ambient Backscatter Communication Enabled Narrow Band Radio Frequency Inference

A Browser Extension Assisting Tabbed Browsing Behavior Research (online)

Learning Parameter Spaces in Neural Modeling of Audio Circuits (online)

Explainable Artificial Intelligence for Radio Resource Management Systems (online)

Proving the business case of virtual NOC

GAN Based Channel Modeling for 5G and Beyond

Minimizing the Number of Two-qubit Gates in Clifford Circuits (online)

Assessing 5G and multi-access edge computing energy efficiency for industrial applications (online)

Analysis of the data usage in modern web services

Augmentation, Oversampling and Curriculum Learning for Small Imbalanced Speech Data (online)

Palette View Synthesis - Novel View Synthesis using Diffusion Probabilistic Modelling (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 vaihekatkokselta 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

Observer-Based Power-Synchronization Control for Grid-Forming Converters

Video analysis of changes in human behavior due to lighting

Smart Workplace Solutions – A Tool for Employers to Develop Better Offices

Short-Circuit Characteristics of High-Power Silicon Carbide MOSFET Modules

Power System Protection in a Converter Dominated Transmission Network (online)

Overvoltage ride through requirements in the Finnish converter-dominated power system (online)

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

Robust Gas pressure control using Neural Networks

Utilization of Building Management System Design Documents as a Data Source for Automated Point Mapping (online)

Validation for measurement of Temporal Light Artefacts on LED light sources (online)

Maps of Dynamics-Aware Probabilistic Roadmaps

Vision-based navigation for autonomous drone flights inside a forest (online)

Improving the sample efficiency of few-shot reinforcement learning with policy embeddings (online)

Risk analysis of an Autonomous Navigation System for Maritime Autonomous Surface Ship (MASS) (online)

Extrinsic calibration of machine perception sensors and data fusion (online)

Automated Configuration of Industrial Crane Applications - A Software Product Line Approach (online)

Application of System-Theoretic Process Analysis (STPA) in Nuclear Instrumentation and Control systems (online)

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)

Process landscape and Architectural Proposal for a Smart Parking Service in the Platform Economy framework

SLAM using perception systems

The Resilience of Deep Learning Intrusion Detection Systems for Automotive Networks (online)

Deep Reinforcement Learning for Building Control

Rare Events Early Detection in Wind Turbines (online)

Connected Vehicle Platooning: Stability Analysis on an Experimental Vehicle Platform

3D modeling and control of the vehicle dynamics at medium-low speed

Robotics Approach in Mobile Laser Scanning Generation of Georeferenced Point-based Forest Models

Realistic Physical Simulation and Analysis of Shepherding Algorithms using Unmanned Aerial Vehicles

A Multibody Approach for Modelling of Rope Dynamics

Intelligent autoscaling in Kubernetes: the impact of container performance indicators in model-free DRL methods

How Digitalization Affects the Insurance Industry? A Case Study.

Electronic and Digital Systems

Electrical conductivity of the human leg (online)

Deep Learning-based Pole Extractor for Long-term LiDAR Global Localization

Advanced Energy Solutions

Power-to-X: Modelling of Fischer-Tropsch synthesis in Aspen Plus

Hybrid heat pumps as a transition technology towards a carbon neutral residential sector in the Netherlands

Modeling and simulation of the future German hydrogen network 2030

Dynamic cost estimation concept for engineered-to-order projects: An analysis for a case company

A Feasibility Study of Large-scale Electrical Energy Storage Technologies for Renewable Energy Balancing

The operational environment for repurposing electric vehicle lithium-ion batteries for energy storage applications in the EU

Heating demand response in detached houses - comparing cost savings potential for consumers and the whole energy system

The sustainability of digitalization: Methods for the analysis of digital processes

Selvitys rakennuksiin integroitavan aurinkosähköteknologian Suomen markkinoista

Techno-economic Assessment of Thermal Energy Storage in Urban District Heating Applications

Användning av elpannor vid utvecklingen av fjärrvärmeproduktionen i Raseborg

Thermal Capacity Analysis of Regional Transmission Grids for Integrating Renewables in Finland

Unlocking distributed flexibility – electricity market actor roles for value realisation