

Titles of MTHE 493 Projects for Fall Term 2023 / Winter Term 2024

(Supervisors in parentheses)

On the Design of Near-Optimal Quantizers with Binary Symmetric and Polya Channels Applied to Traffic Camera

David Cuttler, Thomas Emo, Matthew Morano, Zachary Trougakos, Jacob Wong (T. Linder)

Medical Image Transmission over Wireless Channels

Liam Gauthier, Elisabeth Maliukova, Robert Mirandola, Matthew Stoltz, Keaton Zsiros (T. Linder)

Data Compression via Nonlinear Transform Using Neural Networks

Carson Pennington, Clay Ndugga, Emily Brereton, Ari Davis, William Flomen, Emily Jiang (T. Linder)

Data Compression via Nonlinear Transforms using Artificial Neural Networks

Aiden Peters, Aimee Langevin, Drew Colangelo, Evelyn Hubbard, Ilir Gusija (T. Linder)

(αD , αG) Quant GAN: A Tunable GAN for Financial Time Series

Daniel David, Shalom Guslits, Basil Jancso-Szabo, Hank Kohn, Thomas Mulvihill, Henry Wilson (F. Alajaji)

MRI Data Augmentation Utilizing $L\alpha$ -GAN

Deven Shidfar, Jillian Menikefs, Kaleb Huneau, David Laughton, Sudeepta Talukdar, Owen Borthwick, Oscar Brown (F. Alajaji)

Signature Cleaning with Cycle GAN

Jackson Cowie, Kaito Lee, Owen Livermore, Cameron Overvelde, Adrian Rigby, Jay Shin, Shivam Sood (F. Alajaji)

Systemic Risk in Banking Networks: A Polya Urn Contagion Model

Quinn Bazuk, Scott Justason, Zackary Katsiroubas, Anusha Mane, Renner Siebens, Jennifer Wener (F. Alajaji)

Optimizing Online Brand Awareness: A Network Polya Contagion Model

Aidan Shimizu, Ana Duvnjak, Ben van Eeden, Laeticia Niu, Maddie Mackie, Patrick Lister (F. Alajaji)

Control System for Mobile Aquaculture Cages

Luke Cheshire, Alex Mattison, Nathan Larabie, Emily Flynn, Rachel Hutchings, Mara Carroll Lyssy (S. Yuksel)

Design of an Autonomous Aquaculture Cage Associated with Chilean Salmon Farming

Jeremy Gonsalves, Aidan Quartermain, Emilie Robidas-Stephan, Hanna Gamelin, Blake Adams, Emily Hutter (S. Yuksel)

Concentrator Photovoltaic Unit Design with Passive Cooling

Grace Anderson, David Zamparo, Andrew da Silva, Nicholas Assimakopoulos, Grace Selinger, Christian Prime Guerra, Henry Brisebois (S. Yuksel)

Satellite Constellation Management: Reinforcement Learning for Stochastic Control & Optimization and Design of Networked Control Systems

Brandon Birch, Ian McBurney, Eric Mugford, Etan Ossip, Danielle Rivard, Emma Stevenson, Aya Taifouri (S. Yuksel)

Autonomous Return Flight of a UAV through Underground Mines with Inkonova

Jen Kovich, Julia Newcombe, Charlotte Reed, Marissa Smail, James Pazu'e (S. Yuksel)