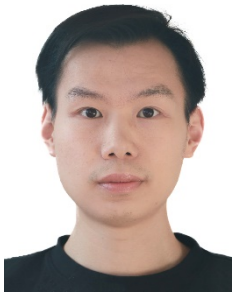

Xiaoyong (William) Ni

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EDUCATON

University of Glasgow, Glasgow, UK

University of Electronic Science and Technology of China (UESTC), Chengdu, China

Dual Degree program in Electronics and Electrical Engineering **Sept. 2016 – July. 2020**

BEng in Communication Engineering

GPA: 3.96/4.0 (Rank: 1/126)

ETH Zurich, Switzerland **Sept. 2020 – Jan. 2024**

Master of Science in Electrical Engineering and Information Technology

GPA: 5.5/6.0

EPFL, Switzerland **June. 2024 – Present**

PhD in AI and Neuroscience

PUBLICATIONS

Exploring the trade-off between deep-learning and explainable models for brain-machine interfaces, NeurIPS 2024.

Adaptive KalmanNet: Data-Driven Kalman Filter with Fast Adaptation, ICASSP 2024.

RTSNet: Learning to Smooth in Partially Known State-Space Models, IEEE TSP 2023.

RTSNet: Deep Learning Aided Kalman Smoothing, ICASSP 2022.

KalmanNet: Neural network aided Kalman filtering for partially known dynamics, IEEE TSP 2022.

Unsupervised Learned Kalman Filtering, IEEE EUSIPCO 2022.

Age of Information for Wireless Energy Harvesting Secondary Users in Cognitive Radio Networks, IEEE MASS 2019.

RESEARCH EXPERIENCE

Signal and Information Processing Laboratory (ISI), ETH Zurich **09/2021- 01/2024**

Master Thesis

- Researched filtering with unknown and time-varying noise distributions.
- Fine-tune (technique borrowed from Large Language Models) the data-driven part of KalmanNet to maintain model-based properties as well as adapting to different context given prior data.

Research Assistant

- Participated in the idea formulation and conducted the simulations for KalmanNet.

- Apply the idea of model-based deep learning to smoothing problems and proposed RTSNet.
- Extended KalmanNet to be adaptive to fast varying noise distributions.

Wireless Communication and Networking Lab, Penn State University **07/2019- 10/2019**
Research Assistant
- Derived the expression of Age of Information as a function of the packet arrival rate, transmission probability and outage probability in a energy harvesting cognitive radio networks.
- Built a Markov Decision Process model for heterogeneous traffic network, simulated it using Relative Value Iteration method, and proved the optimality of greedy policy in a special case.

Data and Energy Integrated communication Network (DEIN) Lab, UESTC **02/2019-06/2019**
Research Assistant
- Derived the asymmetric PSK modulation design with nonlinear energy harvester model to enlarge Simultaneous Wireless Information and Power Transfer (SWIPT) rate-energy region.
- Extended the asymmetric modulation design for QAM using the nonlinear energy harvester model and derived the expressions for asymmetric QAM in terms of information and powertransfer.

EXTRACURRICULAR ACTIVITIES

COMAP's Mathematical Contest in Modeling (MCM) **01/2019**
Team Leader
- Solved optimization problems using heuristic algorisms: the Genetic Algorithm (GA) and particle swarm optimization.

Communication Engineering Class 3, UESTC **05/2018 - 06/2020**
Class Monitor
- Invited professors to give talks to our class on career planning/course selection guide/research directions introduction, and organized class field trips.
- Awarded as department's Excellent Class (5/40) in 2018.

New Student Welcome Event, ETH Zurich **09/2021**
Volunteer
- Participated in the guidance, campus tour, and Q&A of new master students in EEIT department of ETH.

HONORS AND AWARDS

06/2020 Bachelor with Honours of the First Class (University of Glasgow)
06/2020 Outstanding Graduates of Sichuan Province
10/2019 Department's Outstanding Academic Scholarship 2018-2019 (Top 1%)
10/2018 Department's Outstanding Academic Scholarship 2017-2018 (Top 1%)
10/2017 Department's Outstanding Academic Scholarship 2016-2017 (Top 1%)
06/2018 First Prize of UESTC's "Ecovacs" Robot Competition (1/143)
05/2018 Outstanding Member of UESTC's Student Association

SKILLS

Software: Proficiency in Python, MATLAB and C Language
Languages: Chinese (Native), English (Fluent)
Hobbies: Basketball, Swimming, Skiing, Badminton, Table Tennis