Xiaoyong (William) Ni
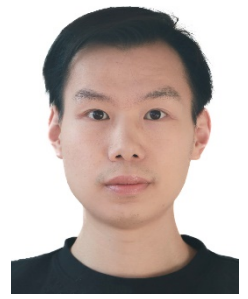
EPFL, Switzerland

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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

Xiaoyong Ni, Guy Revach, Nir Shlezinger, *Adaptive KalmanNet: Data-Driven Kalman Filter with Fast Adaptation*, ICASSP 2024.

Guy Revach, **Xiaoyong Ni**, Nir Shlezinger, Ruud J. G. van Sloun, Yonina C. Eldar, *RTSNet: Learning to Smooth in Partially Known State-Space Models*, IEEE TSP 2023.

Xiaoyong Ni, Guy Revach, Nir Shlezinger, Ruud JG van Sloun, Yonina C Eldar, *RTSNet: Deep Learning Aided Kalman Smoothing,* ICASSP 2022.

Guy Revach, Nir Shlezinger, **Xiaoyong Ni**, Adria Lopez Escoriza, Ruud JG van Sloun, Yonina C Eldar, *KalmanNet: Neural network aided Kalman filtering for partially known dynamics,* IEEE TSP 2022.

Guy Revach, Nir Shlezinger, Timur Locher, **Xiaoyong Ni**, Ruud JG van Sloun, and Yonina C. Eldar. *Unsupervised Learned Kalman Filtering,* IEEE EUSIPCO 2022.

Shiyang Leng, **Xiaoyong Ni**, and Aylin Yener, *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- Present**

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.

- Extended the idea of KalmanNet 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 power transfer.

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