Khodor Safa

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Education

CentraleSupélec — *Gif-Sur-Yvette, France*

PhD in Network, Information and Communication Sciences — *Oct. 2021 - Nov. 2024*

- Supervisors: Dr. Raul de Lacerda, Prof. Sheng Yang

CentraleSupélec — *Gif-Sur-Yvette, France*

M2 Recherche - Advanced Wireless Communciation Systems — *Sep. 2020 - Sep. 2021*

American University Beirut — *Beirut, Lebanon*

Bachelor in Electrical & Computer Engineering — *Sep. 2014 - Jun. 2018*

Professional Experience

Nokia Bell Labs — *Nozay, France*

Research Engineer Intern — *Apr. 2021 - Oct. 2021*

- Investigated new modulation schemes on the physical layer level for sub-THz band communications which form potential candidates for 6G wireless systems in order to mitigate impairments such as phase noise and high PAPR.

Philip Morris International — *Beirut, Lebanon*

Associate IT Analyst — *Sep. 2018 - Aug. 2020*

- Identified, installed and provided support for the Direct Retail POS hardware infrastructure for the Lebanese market IQOS corner-shops launch.
- Designed, coordinated and executed migration plans for office users in Egypt & Levant from on-premise to O365 solutions.

National Instruments — *Beirut, Lebanon*

Application Engineer Intern — *Jun. 2017 - Aug. 2017*

- Designed a framework and different signal processing techniques for the detection of car key jammers.

Academic Projects

CentraleSupélec — *Gif-Sur-Yvette, France*

M2 Research Project - Embracing non-linearities in future wireless communications via non-convex optimization

- Investigated techniques to improve data detection in a communication channel with phase noise.
- Supervisors: Dr. Khac-Hoang Ngo, Prof. Sheng Yang.

American University of Beirut — *Beirut, Lebanon*

Bachelor Final Year Project - FM based Passive Radar

- Investigated, designed and applied the hardware and signal processing setups for the real-time range and velocity detection of commercial aircraft in a group project.
- Supervisor: Prof. Ibrahim Abou-Faycal.

Publications

Published

K. Safa, R. De Lacerda and S. Yang, “Channel Estimation and Data Detection in MIMO channels with 1-bit ADC using Probit Regression,” *2023 IEEE Information Theory Workshop (ITW)*, Saint-Malo, France, 2023, pp. 457-461.

K. Safa, M. S. Hassan, F. Jardel and P. Sehier, “Low PAPR Probabilistically Controlled Transitions Scheme,” *2022 IEEE Wireless Communications and Networking Conference (WCNC)*, Austin, TX, USA, 2022, pp. 2184-2189.

K. Safa, R. Combes, R. de Lacerda and S. Yang, ”Data Detection in 1-bit Quantized MIMO Systems,” in *IEEE Transactions on Communications*, vol. 72, no. 9, pp. 5396-5410, Sept. 2024

Patents

M. Sayed Hassan, **K. Safa**, F. Jardel, “Generalized Low PAPR Transition Controlled Transmission Scheme”, US20240340209, 10 Oct. 2024.

Awards and Scholarships

2023 **L2S Best PhD Student Presentation Award - Telecoms & Networks session**,
Laboratoire des Signaux et Sysèmes (L2S)

2021 **Bell Labs Summer Intern Award for Outstanding Innovation**,
Nokia Bell Labs

2020 **Idex Scholarship**,
Paris-Sclay Univsersity

2014 **University Scholarship Program V**,
United States Agency for International Development (USAID)

Presentations

K. Safa, R. De Lacerda and S. Yang, “Data Detection in 1-bit Quantized MIMO Systems”, *Junior Conference on Wireless and Optimal Communications*, Oral presentation, Oct. 2023, Gif-Sur-Yvette, France.

K. Safa, R. De Lacerda and S. Yang, Oral presentation “Data Detection in 1-bit Quantized MIMO Systems”, *L2S PhD Students Day*, Oral presentation, Sep. 2023, Gif-Sur-Yvette, France.

K. Safa, R. De Lacerda and S. Yang, Oral presentation “Channel Estimation and Data Detection in MIMO channels with 1-bit ADC using Probit Regression”, *ITW 2023 Conference Presentation*, Oral presentation, Apr. 2023, Saint-Malo, France.

K. Safa, M. S. Hassan, F. Jardel and P. Sehier, “Low PAPR Probabilistically Controlled Transitions Scheme,” *2022 IEEE Wireless Communications and Networking Conference (WCNC)*, Recorded Online Presentation, Apr. 2022

Teaching Experience

2022 - 2024	**Communications Theory**, Conducted practical sessions for second year engineering students	*Centrale-Supélec*
2022 - 2024	**MIMO Communications**, Conducted practical sessions for third year engineering and Masters students	*Centrale-Supélec*
2023 - 2024	**Information Theory**, Conducted theoretical and practical sessions for first year engineering students	*Centrale-Supélec*
2022 - 2023	**Animation Ateliers Projet Professional/Individuel (APP/API)**, Animated and supervised sessions for second year engineering students to help them prepare their professional projects	*Centrale-Supélec*

Extra-curricular Activities

2016 - 2017	**Community Based Project: Art for Growth**, Project Planner Volunteer	*Beirut, Lebanon*
2017-2018	**Supporting Education Project with MMKN NGO**, Teacher Volunteer for high-school students	*Beirut, Lebanon*