Ali Mokh, PhD

Research Engineer /Lecturer /Professional Trainer
Data Science - MLOps - Signal Processing - Data Analysis

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Summary

Research Engineer/ data scientist with 7 years experience in signal processing (6 years in wireless communications), and 4 years in AI/Deep Learning. Entry level Machine Learning Operations and Scrum. My recent work focus on Vehicule to Grid Integration. Professional Trainer and university Lecturer in Machine Learning, Information Theory and Telecommunication.

Work Experience

Senior Researcher Concept AI

Ericsson France : Oct 2023

- Machine Learning Operations for RAN Automation
- Reinforcement Learning for Telecom on Digital Twins

Research Engineer-Data Scientist and Scrum Master

Youree- FlexifAI : Jan 2021-Sep 2023

- Responsible for the research department in signal processing and AI
  - Established strategic partnership with two labs for research collaboration
- **Scrum Master**:
  - Administered all Agile/Scrum processes including sprint planning, daily scrums, sprint reviews and sprint retrospectives (ClickUp);
- Deep Learning for V2G applications:
  - Use Deep Learning for Time series Analysis : LSTM, AutoEncoders, CNN, Transformers
  - Deploy model on AWS

Research Engineer (Post-Doc)

CNRS - Institut Langevin - Collaboration with Huawei : 2018-2021

- Investigate the performance of Time Reversal in UWB systems:
  - Part of **Time Reversal (TR)** collaboration project between Huawei and Institut Langevin.
  - Deploy experimental setups and simulations in sub-6GHz, mmWave (24-38 GHz), and sub-THz (273-410 GHz)
- Improve the capacity of Reconfigurable Intelligent Surfaces(RIS):
  - Use non-heuristic AI (genetic algorithms), or data-driven ML to find best configuration

Researcher (Phd + Postdoc)

IETR : January 2018 – February 2018

- Analytical study of TR precoding for MIMO **Spatial Modulation (SM)**.
- Implementation of 12x4 MU-MIMO receive SM scheme on LTE like framework and non coherent detectors using **NI USRPs**].
- Inventing two transmit and receive extended SM schemes for low complexity devices.
- **Engineering Impact Awards** second place in NI Days, Wireless Communications category, London 2018.

Education

- **2018- PhD in Digital Communications**: INSA de Rennes, Rennes
- **2015- MSc in Signal Processing** : INP Grenoble Phelma, Grenoble
- **2015- Telecommunication Engineer**: Lebanese University, Beirut

Certified Training Skills

- **TensorFlow Developer Certification**
- **Scrum Master Certification**
- **Google Data Analytics Professional**
- **Deep Learning Specialisation**
- **Machine Learning Specialisation**
- **Amazon Cloud Practitioner**

Skills

- **Data Science**:
  - **Python, R, C/C++**
  - **TensorFlow/ Keras, ScikitLearn, Pandas, PySpark, MLFlow**
- **Data Analysis**:
  - **Google Data Analytics Professional Certificate**
  - **Tools**: SQL, Spredsheets, cleaning data, Tableau, visualisation with R, great statistical and probabilistic analysis
- **Languages**:
  - **English, French, Arabic**
- **Personal Skills**:
  - **Scientific Publications**
  - **Mathematical Analysis**
  - **Team Management**

Interests

- **Reading** :philosophy, physics, biological evolution, science news
- **Hobbies**: travelling, swimming, hiking

Teaching Experience

- **Orsys**: Professional Trainer (since 2021) in 5G, 4G/LTE, Machine Learning, Neural Networks
- **Ecole Leonard de Vinci (ESILV)**: (since 2019)
  - Part time instructor in Artificial Intelligence, Information Theory, Quantum information, Python, Algorithmic complexity
- **École supérieure d'informatique, électronique, automatique (ESIEA)** : Former Part time instructor (2018- 2019) in Electronics, robotics, MicroControllers

Publications

Journal Articles

- Mokh, Ali, George C Alexandropoulos, et al. (2023). "Iterative Interference Cancellation for Time Reversal Division Multiple Access". In: *IEEE Access*.
- Alexandropoulos, George C et al. (2022). "Time Reversal for 6G Spatiotemporal Focusing: Recent Experiments, Opportunities, and Challenges". In: *IEEE Vehicular Technology Magazine*.
- Mokh, Ali, Ramin Khayatzadeh, Abdelwaheb Ourir, et al. (2022). "Time-reversal of Sub-THz Pulses in Complex Media". In: *Progress In Electromagnetics Research* 95, pp. 141–162.
- Phan-Huy, D-T et al. (2019). "Single-Carrier Spatial Modulation for the Internet of Things: Design and Performance Evaluation by Using Real Compact and Reconfigurable Antennas". In: *IEEE Access*.
- Mokh, Ali, Matthieu Crussière, Maryline Hélard, and Marco Di Renzo (2018). "Theoretical Performance of Coherent and Incoherent Detection for Zero-Forcing Receive Antenna Shift Keying". In: *IEEE access* 6, pp. 39907–39916.

Conference Proceedings

- Mokh, Ali, Julien de Rosny, George C Alexandropoulos, Mohamed Kamoun, et al. (2022). "Experimental validation of time reversal multiple access for UWB wireless communications centered at the 273 GHz frequency". In: *2022 IEEE 95th Vehicular Technology Conference:(VTC2022-Spring)*. IEEE, pp. 1–5.
- Mokh, Ali, Julien de Rosny, George C Alexandropoulos, Ramin Khayatzadeh, et al. (2022). "Time reversal for multiple access and mobility: Algorithmic design and experimental results". In: *2022 IEEE Wireless Communications and Networking Conference (WCNC)*. IEEE, pp. 1731–1736.
- Ourir, A et al. (2022). "Angular Localization of Wideband Sources using a single port metamaterial receive Antenna". In: *2022 16th European Conference on Antennas and Propagation (EuCAP)*. IEEE, pp. 1–4.
- Mokh, Ali, Julien De Rosny, et al. (2021). "Time reversal precoding at subTHz frequencies: Experimental results on spatiotemporal focusing". In: *2021 IEEE Conference on Standards for Communications and Networking (CSCN)*. IEEE, pp. 78–82.
- Mokh, Ali, Ramin Khayatzadeh, Julien de Rosny, et al. (2021). "Indoor experimental evaluation of ultra-wideband MU-MISO TRDMA". in: *2021 IEEE 93rd Vehicular Technology Conference (VTC2021-Spring)*. IEEE, pp. 1–5.
- Mokh, Ali, Maryline Hélard, and Matthieu Crussı (2019). "Extended Space Shift Keying Modulation With Different Receiver Strategies". In: *International conference on telecommunication*.
- Shehata, Mohamed et al. (2019). "On the Equivalence of Hybrid Beamforming to Full Digital Zero Forcing in mmWave MIMO". in: *26th Internatinal Conference on Telecommunication (ICT 2019)*.
- Mokh, Ali, Matthieu Crussière, and Maryline Hélard (2018). "Performance Analysis of Extended RASK under Imperfect Channel Estimation and Antenna Correlation". In: *2018 IEEE Wireless Communications and Networking Conference (WCNC)*. IEEE.
- Mokh, Ali, Maryline Hélard, and Matthieu Crussiere (2018). "Extended Receive Spatial Modulation MIMO scheme for Higher Spectral Efficiency". In: *2018 IEEE 87th Vehicular Technology Conference*.
- Mokh, Ali and Cyrille Siclet (2018). "OFDM/OQAM Transmission over Time-Frequency Dispersive Channels: Interference Computation and Approximation". In: *ICT 2018| 25th International Conference on Telecommunication*.
- Mokh, Ali, Matthieu Crussière, and Maryline Hélard (2017). "Performance Analysis of the Maximum Ratio Transmission Preprocessing for Extended Receive Antenna Shift Keying". In: *2017 International Symposium on Wireless Personal Multimedia Communications (WPMC)*. IEEE.
- Mokh, Ali, Maryline Hélard, and Matthieu Crussière (2017a). "Extended Receive antenna shift keying". In: *2017 IEEE International Conference on Telecommunication (ICT)*. IEEE.
- – (2017b). "Space Shift Keying Modulations for Low Complexity Internet-of-Things Devices". In: *2017 Global Communications Conference (GLOBECOM)*. IEEE.
- Mokh, Ali, Yvan Kokar, et al. (2017). "Time Reversal Receive Antenna Shift Keying On MIMO LOS Channel". In: *2017 International Conference on Sensors, Networks, Smart and Emerging Technologies (SENSET)*. IEEE.