KAAN OKUMUS

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EDUCATION

Doctor of Philosophy in Communication Systems   10/2023 – Present
Chalmers University of Technology
Supervisors: Prof. Dr. Erik G. Ström, Prof. Dr. Giuseppe Durisi

Master of Science in Communication Systems   09/2021 – 07/2023
École Polytechnique Fédérale de Lausanne (EPFL)
Thesis: Linear inverse problems for manifolds using graph signal processing
Supervisors: Dr. Matthieu Simeoni, Dr. Joan Rué Queralt

Bachelor of Science in Electrical and Electronics Engineering   09/2016 – 07/2021
Middle East Technical University (METU)
CGPA: 3.87/4.00, Ranked 6th out of 350 students
Specialization: Telecommunications and Signal Processing

WORK EXPERIENCE

PhD Student   10/2023 – Present
Chalmers University of Technology

Signal Processing Engineer Intern   07/2022 – 09/2022
Kandou AB

Research Assistant - Pyxu Developer   04/2022 – 09/2022
EPFL Center for Imaging

Intern   08/2020 – 09/2020
HAVELSAN, Information and Communication Technologies

Intern   06/2020 – 08/2020
ASELSAN, SST - Digital and Embedded Systems

RESEARCH PROFILE

Interests: Wireless Communication, Information Theory, Signal Processing

Topics: massive random access, federated learning, multi-target localization, MIMO, user centric cell-free systems, message passing algorithms, statistical estimation.

List of publications at the end of this document.

HONORS AND AWARDS

Award for best user interface as a member of the team, HAI-CO.   07/2021
METU, Electrical and Electronics Engineering, Senior Engineering Design Committee

Doç. Dr. Bülent Kerim Altay Award   06/2021
METU, Electrical and Electronics Engineering

Dean's High Honor Roll - 8 times (every semester)   2017 – 2021
METU, Faculty of Engineering

TEACHING EXPERIENCE

Teaching Assistant

- ESS013 Probability and statistical signal processing, Chalmers University of Technology (bachelor's course, 7.5 credits, ≈70 students): Spring 2024, Spring 2025.

- COM-405 Wireless networks, EPFL (master's course, 8 credits, ≈40 students): Spring 2023.

SUPERVISION EXPERIENCE

Master Theses/Projects

- Andreas Führ, "Sparse sampling for massive MIMO downlink CSI reference signals," Chalmers University of Technology, Ericsson AB, Gothenburg, Sweden, Feb. 2025 – Jul. 2025.

Bachelor Theses/Projects

- E. Jakobsson, C. J. Tunell, M. Walkendorff, and K. Wållgren, "SmartHear: Adaptive and learning-based noise-cancelling headphones", Chalmers University of Technology, Gothenburg, Sweden, Started in Jan. 2025.

- S. Ahmad, N. C. Collard, M. Martinsson, G. Mörck, and S. Rahimi, "Software-defined radio testbed for 6G research", Chalmers University of Technology, Gothenburg, Sweden, Started in Jan. 2025.

- L. Dahlberg, J. El-Haj, E. Erkfeldt, R. Ghalib, A. Izadi, and C. Ranström, "Smart-Sense: AI-driven low-cost wearable for real-time symptom detection and risk estimation", Chalmers University of Technology, Gothenburg, Sweden, Jan. 2025 – June 2025.

- V. Bengtsson, M. Wibeck, and J. Wolf-Watz, "Software-defined radio testbend for 6G research", Chalmers University of Technology, Gothenburg, Sweden, Jan. 2025 – June 2025.

COMPUTER SKILLS

C, C++, MATLAB, Simulink, Java, Python with Numpy, Scipy, TensorFlow, PyTorch, HTML, CSS, Javascript, MySQL, Linux, Bash, Swift

LANGUAGE PROFICIENCY

Turkish (*Native Speaker*), English (*Advanced*), French (*Intermediate*), Swedish (*Elementary*), Italian (*Elementary*)

LIST OF PUBLICATIONS

Journal Papers

[J1] N. Bähler, M. E. Helou, É. Objois, **Kaan Okumus**, and S. Süsstrunk, "PoGain: Poisson-Gaussian image noise modeling from paired samples," in IEEE Signal Proc. Lett., Vol. 29, pp. 2602-2606, Dec. 2022.

Conference Papers

[C3] D. P. Krishnan, **Kaan Okumus**, K.-H. Ngo, and G. Durisi, "An achievability bound for type-based unsourced multiple access," in Proc. IEEE Int. Symp. Inf. Theory (ISIT), Ann Arbor, MI, USA, June 2025.

[C2] **Kaan Okumus**, K.-H. Ngo, G. Durisi, and E. G. Ström, "Type-based unsourced multiple access over fading channels with cell-free massive MIMO," in Proc. IEEE Int. Symp. Inf. Theory (ISIT), Ann Arbor, MI, USA, June 2025.

[C1] K.-H. Ngo, D. P. Krishnan, **Kaan Okumus**, G. Durisi, and E. G. Ström, "Type-based unsourced multiple access," in Proc. IEEE Int. Workshop Signal Process. Advances Wireless Commun. (SPAWC), Lucca, Italy, Sept. 2024.

Theses

[T2] **Kaan Okumus**, "Linear inverse problems for manifolds using graph signal processing," École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland, July 2023.

[T1] **Kaan Okumus**, O. Oral, S. Mert, U. Sedef, and M. Marchenkova "SYMON: Symptom Monitor of COVID-19," Middle East Technical University (METU), Ankara, Türkiye, June 2021.