

Abdelgabar Ahmed

PhD Researcher | Electrical and Computer Engineering | KAUST

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ORCID: 0009-0009-8676-9729 | Thuwal, Saudi Arabia

I study how satellite geometry and measurement reliability shape positioning. My research combines statistical modeling, satellite selection, and array signal processing to make GNSS more resilient in challenging environments.

Education

Current	PhD research in Electrical and Computer Engineering KAUST Statistical GNSS geometry, robust satellite selection, and resilient positioning and navigation.
2026	Master's thesis in GNSS navigation KAUST Robust GNSS Navigation in Urban Environments: Multipath Mitigation and Statistical Geometry Analysis.
2014-2020	B.Sc. (Honours), Electrical and Electronics Engineering University of Khartoum Undergraduate study in electrical and electronics engineering.

Research

2024-present	Graduate Researcher Information Science Lab, KAUST GNSS multipath detection, inertial-aided array processing, statistical satellite geometry, and robust satellite selection.
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Publications

Robust GNSS Navigation in Urban Environments: Multipath Mitigation and Statistical Geometry Analysis

Abdelgabar Ahmed. 2026.

King Abdullah University of Science and Technology · Master's thesis

doi.org/10.25781/KAUST-79VDK

GNSS Array-Based Multipath Detection Employing UKF on Manifolds

Abdelgabar Ahmed, Tarig Ballal, Xing Liu, Mohanad Ahmed, Tareq Y. Al-Naffouri. 2025.

IEEE/ION Position, Location and Navigation Symposium (PLANS), pp. 610-618

doi.org/10.1109/PLANS61210.2025.11028455

Abdelgabar Ahmed

Teaching, professional experience & community

Teaching

Current involvement **ECE 242 · Digital Communication and Coding**

KAUST

Course-project development connecting modulation, detection, carrier synchronization, and packet recovery through a coherent QPSK image link.

2021-2023

Teaching Assistant

University of Khartoum

Tutorials and practical laboratory sessions in Microprocessors, Digital Signal Processing, and Control Systems.

Professional experience

2022

Mechatronics Engineer Intern

Imprintec GmbH, Germany

Machine-control software and image processing for automated material testing.

2021-2023

Automation Engineer

DAL Group, Sudan

Design and commissioning of PLC-based automated manufacturing systems.

Research interests

Statistical GNSS geometry; Robust satellite selection; Resilient positioning and navigation; Array signal processing; Detection and estimation.

Professional memberships

IEEE Graduate Student Member

IEEE Aerospace and Electronic Systems Society (AESS)

IEEE Signal Processing Society (SPS)

Selected honors

2015

University Prize for Best Academic Performance

Faculty of Engineering, University of Khartoum

2016-2019

Faculty Award for Second-Best Academic Performance

University of Khartoum

Awarded in 2016, 2017, 2018 and 2019.