Ahmed Abdelreheem

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RESEARCH SUMMARY

My current research is at the intersection of communication theory and deep learning. A primary research thrust is the advancement of terahertz and IoT in the 6G cellular network. I use theory, simulations, and prototyping to validate research ideas. I am also interested in enabling Deep Learning on IoT devices. Currently, I am developing signal processing algorithms that operate on deep learning algorithms.

Education

Ph.D. In Electrical Engineering (Communications Engineering) 2019
Faculty of Engineering, Aswan University
Dissertation title: "D2D Communications in mmWave 5G Cellular Networks"

M.Sc. In Electrical Engineering 2015
Faculty of Engineering, Aswan University
Dissertation title: "Improvement of The Performance of LTE System Through PAPR and BER Reduction"

B.Sc. In Electronics and Communications Engineering 2004
Faculty of Engineering, Aswan University

Academic Experience

Assistant Professor March 2021 – Present
Faculty of Computers and Information Technology, National Egyptian E-Learning University, Egypt.

Assistant Professor (Part-Time) Sept. 2019 – Present
Faculty of Engineering, Arab Academy for Science, Technology & Maritime Transport
Aswan, Egypt.

Lecture ((Part-Time) Sep. 2020 – Present
Information Technology Institute (ITI) - The Artificial Intelligence Professional Program
Egypt.

Assistant lecture (Part-Time) Sept. 2016 – Sept. 2019
Faculty of Engineering, Arab Academy for Science, Technology & Maritime Transport
Aswan, Egypt.

Professional Experience

Sr. Communication Engineer — July 2009 – March 2021
Telecom Egypt

Communication Engineer — May 2007 – July 2009
Mobiserve Holding Egypt

Funded Research Project

Project Title: Contactless Instantaneous Blood Pressure Monitoring For The Intensive Care Unit
Sponsor: Information Technology Academia Collaboration (ITAC) Egypt
Role: Researcher **Jan. 2021 – present**

Faculty of Engineering, Aswan University (Aswan Wireless Communications Research Center)

- Development of deep neural network model for blood pressure estimation
- Modelling and performance analysis of contactless blood pressure monitoring
- Collaborate and coordinate with staff scientists

Project Title: LTE/Wi-Fi/WiGig Internetworking for Future 5G Cellular Networks
Sponsor: National Telecom Regulatory Authority (NTRA) Egypt
Role: Researcher **Sept. 2015 – Sept. 2019**

Faculty of Engineering, Aswan University (Aswan Wireless Communications Research Center)

- Design of millimeter wave beamforming for 5G cellular networks
- Development of deep learning algorithms in D2D for 5G cellular networks
- Modelling and performance analysis of D2D for 5G cellular networks
- Collaborate and coordinate with staff scientists

Honors and Awards

2019 Best Ph.D. Thesis in Aswan University
2019 Ambassador in IEEEXtreme 13.0 (IEEE Ambassador Program)
2017 Best Researcher Award (Wireless Communications Research Center at Aswan University)

Fields of Interest

Terhart and millimeter wave technology for 6G networks
Device-to-device communication
Deep learning in wireless communication
Massive MIMO
Deep Learning for Internet of Things

Professional Activities

Reviewer for the following journals:

- IEEE Transactions on Vehicular Technology
- IEEE Communications Letters
- IEEE Access

Computer Skills

Matlab (Expert), Python (Expert), Keras (Expert), Tensorflow (Expert)

Publications

Refereed Journal Articles

- **Ahmed Abdelreheem**, E. M. Mohamed, H. Esmaile, "Adaptive Location-Based Millimeter Wave Beamforming Using Compressive Sensing Based Channel Estimation," **IET Communication Journal**. 2019.
- **Abdelreheem, Ahmed**, S. A. Mubarak, Ahmed, A. Omer, Osama, Esmaiel, Hamada, S. Mohamed Usama, "Improved D2D Millimeter Wave Communications for 5G Networks Using Deep Learning," 2020, **TechRxiv. Preprint**.
- **Ahmed Abdelreheem**, E. M. Mohamed, H. Esmaile, "Location-Based Millimeter Wave Multi-level Beamforming using Compressive Sensing," **IEEE Com. Letter**, 2017.
- O. A. Omer and **Ahmed Abdelreheem**, "Adaptive Hybrid PAPR Reduction in OFDM System," **International Journal of Future Computer and Communication (IJFCC)**, December 21-22, 2012.

Refereed Conference Papers

- **Ahmed Abdelreheem**, " D2D Millimeter Wave Channel Statistics-Based Hierarchical Beamforming Using Compressive Sensing," (Accepted) 2021 3rd ICCIS, Sakaka, Saudi Arabia.
- **Ahmed Abdelreheem**, A. S. A. Mubarak, O. A. Omer, H. Esmaiel and U. S. Mohamed, "Improved D2D Millimeter Wave Communications for 5G Networks Using Deep Learning," 2020 2nd International Conference on Computer and Information Sciences (ICCIS), Sakaka, Saudi Arabia, 2020.
- **Ahmed Abdelreheem**, O. A. Omer, H. Esmaiel and U. S. Mohammed, " Deep Learning-Based Relay Selection In D2D Millimeter Wave Communications," *2019 ICCIS*, Aljouf, Saudi Arabia, 2019.
- **Ahmed Abdelreheem**, O. A. Omer, H. Esmaiel and U. S. Mohammed, " Location-Based Interference Cancellation in Device-to-Device Communications in Millimeter Wave Beamforming," *2018 36th National Radio Science Conference (NRSC)*, Cairo, Egypt, 2019.
- **Ahmed Abdelreheem**, A. M. Nor, A. S. A. Mubarak, H. Esmaiel and E. M. Mohamed, "Comparative study on millimeter wave location-based beamforming," *2018 International Conference on Innovative Trends in Computer Engineering (ITCE)*, Aswan, 2018.
- **Ahmed Abdelreheem**, E. M. Mohamed, H. Esmaile, "Millimeter Wave Location-Based Beamforming using Compressive Sensing," in *2016 28th International Conference on Microelectronics (ICM)*, 2016.
- O. A. Omer and **Ahmed Abdelreheem**, "A Novel Algorithm for PAPR Reduction in LTE System," International Conference on Advances in Computing, Communications and Informatics (ICACCI), Chennai, India, August 2012.
- O. A. Omer and **Ahmed Abdelreheem**, "Adaptive Hybrid PAPR Reduction in OFDM System," International Conference on Information and Multimedia Technology, Kuala Lumpur, Malaysia, December 21-22, 2012.
- O. A. Omer and **Ahmed Abdelreheem**, "Modified LTE System with Low PAPR and BER," Saudi International Electronics, Communications and Photonics Conference (SIECPC), Riyadh, Saudi, pp. 1-5, April 2013.

All my publications are listed on my google scholar citation home page
https://scholar.google.com.eg/citations?user=NaSsfEoAAAAJ&hl=en

References

Professor, U. S. Mohammed
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Professor, Osama A. Omer
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