

Ahmed A. Alabdel Abass, Ph.D.

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INTERESTS ♦ **Game Theoretical Models in Networks and Physical Layer Security, Cyber-Security, Machine Learning, Social Networks, Network Economics, Computational Neuroscience, Biomedical Signal Processing**

PROFESSIONAL EXPERIENCE ♦ **Faculty Member** (Sep 2006 - Present), University of Thi-Qar

- My current research is on developing game (and evolutionary game) theoretical models to address networks security problems under the Prospect theory and the classical EUT with taking in consideration the number of participating players through graphs. Within this framework, I am trying to explore and understand the links between game theoretical models and reinforcement learning with possible applications in wireless communications networks and social networks dynamics.
- Applications of game theoretical models and learning, through fictitious play and the replicator dynamics, in WSN and wireless communications with an emphasize on the jamming problem.
- Applications of ML and advanced signal processing methods in biomedical signal processing and neuronal dynamics.
- ♦ **Graduate Teaching Assistant** (Jan 2015 - May 2018), ECE/WINLAB, Rutgers University
 - Supervisors: Prof. Narayan B. Mandayam and Prof. Zoran Gajic.
 - Research on Wireless Networking Resource Allocation Using Evolutionary Game Theory.
- Developed a new evolutionary game theoretical model for a distributed denial of service attack.
- Developed a new business model for threat revocation in ephemeral networks using evolutionary game theory.
- Developed an evolutionary game model to Advanced Persistent Threat (APT) attack on storage systems.
- Developed an evolutionary game model to the problem of coexistence between LTE-U and WiFi.

EDUCATION ♦ **Rutgers, The State University of New Jersey**, New Jersey, USA (Sep 2012 - May 2018)
Ph.D. in Electrical and Computer Engineering.

♦ **Rutgers, The State University of New Jersey**, New Jersey, USA (Sep 2012 - May 2018)
M.Sc. in Electrical and Computer Engineering / Nonlinear Systems.

♦ **University of Baghdad**, Baghdad, Iraq (Sep 2004 - October 2006), **M.Sc. in EE / Communications and Electronics.**

♦ **University of Baghdad**, Baghdad, Iraq, **B.Sc. in EE.**

SELECTED PUBLICATIONS ♦ **A. A. A. Abass**, "A Cyber Physical System Prospect Theoretic Game through a VANET Lens", IET Wireless Sensor Systems, <https://doi.org/10.1049/wss2.12102>, 2024.

♦ **A. A. A. Abass**, H. Alshaheen, H. Takruri "A Game Theoretic Approach to WBAN Interference Control", IET Wireless Sensor Systems, 14, (3), pp. 72-83, 2024.

♦ **A. A. A. Abass**, H. Anwar, H. Alshaheen "A Survey on Interference Mitigation for Wireless Body Area Networks", University of Thi-Qar Journal for Engineering Sciences, 14, (1), pp. 92-106, 2024.

♦ **A. A. A. Abass**, H. K. Chaiel, H. Anwar, and R. Kadhim, "Jamming a Multi-Hop UAV Relay Network", Accepted for publication in Sumer Journal for Pure Science, 2024.

♦ H. Anwar, **A. A. A. Abass**, and R. Kadhim, "Performance of Relaying System with NOMA over Symmetric Alpha-Stable Noise Channels," Indian Journal of Science and Technology, 17 (17), 2024.

♦ H. K. Chaiel, **A. A. A. Abass**, "Channel capacity of multi-hop UAV relay networks", International Conference on Innovations in Science, Hybrid Materials, and Vibration Analysis, 2023.

- ◇ **A. A. A. Abass** and N. B. Divvala, "An enhanced OFDM light weight physical layer encryption scheme," International Journal of Electrical and Computer Engineering, 11 (3), 2021.
- ◇ **A. A. A. Abass**, N. B. Mandayam and Z. Gajic, "CYBEX Information Sharing Game with Objective and Subjective Players," 55th Annual Conference on Information Sciences and Systems (CISS), 2021.
- ◇ **A. A. A. Abass**, N. B. Mandayam and Z. Gajic, "Evolutionary Random Access Game With Objective and Subjective Players," in IEEE Access, vol. 9, pp. 35562-35572, 2021.
- ◇ H. K. Chaiel, **A. A. A. Abass**, "Game theoretical model for information transmission in structure-free wireless sensor networks", IET Communications, 14, (17), pp. 3080-3086, 2020.
- ◇ **A. A. A. Abass**, N. B. Mandayam and Z. Gajic, "A Game Theoretic Approach to Decision Making in Neuronal Networks," 2020 International Conference on Electrical, Communication, and Computer Engineering (ICECCE), 2020.
- ◇ **A. A. A. Abass**, R. Kumbhkar, N. B. Mandayam and Z. Gajic, "WiFi/LTE-U Coexistence: An Evolutionary Game Approach," in IEEE Transactions on Cognitive Communications and Networking, vol. 5, no. 1, pp. 44-58, March 2019.
- ◇ **A. A. A. Abass**, L. Xiao, N. B. Mandayam and Z. Gajic, "Evolutionary Game Theoretic Analysis of Advanced Persistent Threats Against Cloud Storage," in IEEE Access, vol. 5, pp. 8482-8491, 2017.
- ◇ **A. A. A. Abass**, N. B. Mandayam and Z. Gajic, "An Evolutionary Game model for threat revocation in ephemeral networks," 2017 51st Annual Conference on Information Sciences and Systems (CISS), 2017.
- ◇ **A. A. A. Abass**, M. Hajimirsadeghi, N. B. Mandayam, and Z. Gajic. "Evolutionary game theoretic analysis of distributed denial of service attacks in a wireless network." In 2016 Annual Conference on Information Science and Systems (CISS), pp. 36-41. IEEE, 2016.
- ◇ All my publications including the older ones can be found *here*.

TEACHING EXPERIENCE

- ◇ **Instructor** Engineering School, Rutgers University
 - Teaching Linear Systems to Undergraduate Students (Summer 2016).
 - Teaching Matlab Programming to Undergraduate Students (Summer 2017).
- ◇ **Instructor** University of Thi-Qar, Iraq
 - I taught the following classes to undergrad students: Digital Logic Design, Mathematics, Numerical Methods, Advanced Digital Systems Design (2006-2011).
 - I am teaching the following classes to undergrad students: Waves Propagation, Linear Systems and Signals with Biomedical Engineering Applications, and Electric Circuits 1 and 2 (2018-present).
 - **Grad Studies Teachings:** In Fall 2024, I've taught a class called "Advanced Engineering Mathematics" which is basically a mixed class between linear algebra (for students with no background on the subject) and convex optimization. I've managed to cover most of the first five chapters in Boyd's book and most of Strang's grad book. In Spring 2025, I will be teaching a class on detection and estimation.
- ◇ **Teaching Assistant** Engineering School, Rutgers University
 - Digital Signal Processing and Matlab programming to Undergraduate Students.

ACADEMIC EXPERIENCE

- ◇ **Graduate Coursework at Rutgers University**
 - Linear Algebra, Stochastic Systems and Signals, Linear Systems, Advanced Topics in Communications: Software Defined Radio: Hands-On Approach, Digital Communications, Control Theory 1, Special Problems: Power Control for Wireless Communication Networks, Dynamic Programming and Optimal Control, Detection and Estimation, Programming Finance (C++ Programming), Information and Network Security, Information Theory, Nonlinear Control Systems, and Brain Inspired Computing.
 - In addition, I audited courses on Convex Optimization, Wireless Communications, Optimal Control, and Statistical Machine Learning.
- ◇ **Others**
 - I have also attended other online classes on Sparsity, Machine Learning, and Data Driven Models.

HONORS AND AWARDS

- ◇ Rutgers ECE Academic Achievement Award 2018- 2019.

PROFESSIONAL ♦ **Reviewer for the following journals**

SERVICE

- IEEE Transactions on Information Forensics & Security.
- IEEE Transactions in Cognitive Communications and Networks.
- IEEE Transactions on Systems, Man and Cybernetics.
- IEEE Transactions on Dependable and Secure Computing.
- IEEE Transactions on Network Science and Engineering.
- IEEE Transactions on Network and Service Management.
- IEEE Transactions on Signal Processing.
- IEEE Access.
- IEEE Transactions on Aerospace and Electronic Systems.
- IEEE Communications Letters.
- Computer Networks / Elsevier.
- Journal of Applied Research and Technology.
- IET Communications.
- Mathematical Problems in Engineering / Hindawi Publications.
- Discrete Dynamics in Nature and Society / Hindawi Publications.
- Managerial and Decision Economics.
- International Game Theory Review.

REFERENCES ♦ Prof. Narayan Mandayam, Rutgers University, Email: narayan[at]winlab.rutgers.edu

♦ Prof. Zoran Gajic, Rutgers University, Email: zgajic[at]rutgers.edu

♦ Prof. Wade Trappe, Rutgers University, Email: trappe[at]winlab.rutgers.edu