# Shaikhah Alkhadhr

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## EDUCATION

**Ph.D. in Computer Science and Engineering**, December 2023
Pennsylvania State University, University Park, PA, USA
*Dissertation*: Modeling a Clinical Acoustic Information System Using Physics-Informed Machine Learning,
*Advisor:* Prof. Mohamed Almekkawy

**Master of Science in Computer Engineering**, June 2016
Kuwait University, Khaldiya, Kuwait
*Thesis*: A Method for Mitigating the Effects of Replay Attacks in Wireless Sensor Networks,
*Advisor:* Prof. Tassos Dimitriou

**Bachelor of Science, in Computer Engineering**, June 2011
Kuwait University, Khaldiya, Kuwait
*Graduation Project*: Eye-hint Footprint for the visually impaired,
*Supervisor:* Prof. Fawaz Alanzi.

## HONORS/AFFILIATIONS

Kuwait University Scholarship Candidate, Office of Cultural Relations, 2018
Engineering Creativity of the 20$^{th}$ Exhibition of Engineering designs, Engineering Creativity.co, 2011

## RESEARCH INTERESTS

Deep Learning
Therapeutic and Imaging Information Systems
Networks and computer security
Information security and privacy

## TEACHING INTERESTS

Machine Learning
Information Systems
Computer Security
Information privacy and data protection
C++ and Java programming
Data structures
Discrete Math

## RELATED EXPERIENCE

### Teaching

**Part-time Teaching Assistant**, Department of Computer Engineering, Kuwait University, Khaldiya
September 2011 - 2012
- Taught 2 lab sections for undergraduate C++ programming fundamentals course.
- Taught 2 lab sections for undergraduate Data Structures Principles using Java course.
- Developed online courses (E-learning project)

**Lecturer Assistant**, Electrical Engineering and Computer Science, Pennsylvania State University, University Park, PA.
September 2022 - December 2022

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- Grading.
- Office hours for student discussions.
- Exam Proctoring.

### *Professional*

**Junior Computer Engineer**, Network Security Section, Center of Information Systems, Kuwait University, Shuwaikh, Kuwait.
December 2012 - 2015
- Programmed Cisco firewalls
- Managed VPNs, and smart card systems.
- Handled hacking incidents and system failures.
- Setting up SSL certificates.
- Audited sections and systems

**Computer Engineer**, Vice Dean Office of Development and Planning, College of Computing Sciences and Engineering, Kuwait University, Adailiya, Kuwait.
October 2015 - 2018
- Coordinated IT academic projects.
- Implemented server virtualization.
- Monitored and improved university rankings.
- Research documentation
- Microsoft O365 setup and training

## LANGUAGE COMPETENCIES

Fluent English
Fluent Arabic

## SPECIAL TRAINING AND CERTIFICATIONS

Microsoft Technology Associate (MTA), Microsoft, 2017
Microsoft Office Suite (MOS) Specialist, Microsoft, 2017
Security+, Consultation and Training Department of Computing Sciences and Engineering College, 2016.
Certified Ethical Hacking (CEH) course, Infocenter IT training institute, 2015.
CCNA Security course, Infocenter IT training institute, 2013.
CCNA Network Fundamentals, Cisco Online Networking Academy, 2010-2013.
Fundamentals of Deep Learning, NVIDIA Deep Learning Institute (DLI), 2023.

## SKILLS, STRENGTHS, AND HOBBIES

Experience with C++, Java, Obj-C, python, MATLAB and CLI
Lecturing and Instruction.
Basic skills using AI-aided tools.
Enthusiast about the latest tech reviews.

## RESEARCH & EVALUATION EXPERIENCE

Peer-reviewer for publications in Cogent OA, Taylor & Francis, 2017
Reviewer for IEEE International Ultrasonics Symposium, 2021-2023.
Finalist in 3rd Coast Augmented Intelligence for Health Bowl, 2023.

## PUBLICATIONS

Alkhadhr, Shaikhah, and Mohamed Almekkawy. "Modeling the Wave Equation Using Physics-Informed Neural Networks Enhanced With Attention to Loss Weights." ICASSP 2023-2023 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP). IEEE, 2023.

Alkhadhr, Shaikhah, and Mohamed Almekkawy. "Wave Equation Modeling via Physics-Informed

Neural Networks: Models of Soft and Hard Constraints for Initial and Boundary Conditions." Sensors 23.5 (2023): 2792.

Alkhadhr, Shaikhah, and Mohamed Almekkawy. "Physics-Informed Neural Networks with Resampling Technique to Model Ultrasound Wave Propagation of a Multi-Element Transducer." 2022 IEEE International Ultrasonics Symposium (IUS). IEEE, 2022.

S. Alkhadhr and M. Almekkawy, "A Combination of Deep Neural Networks and Physics to Solve the Inverse Problem of Burger's Equation," in IEEE Engineering in Medicine & Biology Society (EMBC), 2021, pp. 4471–4474.

S. Alkhadhr and M. Almekkawy, "Modeling of the Wave Propagation of a Multi-Element Ultrasound Transducer Using Neural Networks," in IEEE International Ultrasonics Symposium, IUS, 2021, pp. 1–4.

S. Alkhadhr, X. Liu, and M. Almekkawy, "Modeling of the Forward Wave Propagation Using Physics-Informed Neural Networks," in IEEE International Ultrasonics Symposium, IUS, 2021, pp. 1–4.

Y. Wang, S. Alkhadhr, and M. Almekkawy, "PINN Simulation of the Temperature Rise Due to Ultrasound Wave Propagation," IEEE Int. Ultrason. Symp. IUS, pp. 21–24, 2021.

Alkhadhr, S. (2018). Securing Ad-Hoc On-Demand Distance Vector Protocol in Wireless Sensor Networks: Working with What the Node Can Offer. In 2018 International Conference on Computing Sciences and Engineering (ICCSE) (pp. 1–6). Kuwait: IEEE. https://doi.org/10.1109/ICCSE1.2018.8374222

AlKhadhr, S., & AlAli, F. (2017). E-Learning Systems Requirements Elicitation. International Journal of Virtual and Personal Learning Environments, 7(1), 44–55. https://doi.org/10.4018/IJVPLE.2017010104

Alkhadhr, S., & Alkandari, M. (2017). Cryptography and Randomization to Dispose of Data and Boost System Security. Cogent Engineering, 55, 1–13. https://doi.org/10.1080/23311916.2017.1300049

Alkhuder, S., Burhama, D., & Alsumait, L. (2016). Mining Attributes of Cyber Threats to Children and Teenagers of Kuwait in Online Social Networks, Ministry of Interior National Conference for Protecting Children Safety on Social Networks, Kuwait.