Khaled Nakhleh

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RESEARCH INTERESTS

Machine learning (ML), Reinforcement learning (RL) [multi-agent RL, sample-efficient RL], online convex optimization.

EDUCATION

Texas A&M University, College Station   Jan. 2021 – present
PhD in Electrical Engineering.   College Station, TX

- **Coursework**: Machine learning, reinforcement learning, asymptotic statistics, data mining and analysis, game theory, analysis of algorithms, online decision-making and planning, stochastic systems, software engineering, internet protocols and modeling, computer communication and networking.
- **Affiliation**: IEEE HKN honor society - IEEE robotics and automation society student member - IEEE student member.

Texas A&M University, College Station   Aug. 2018 – Dec. 2020
MS in Electrical Engineering.   College Station, TX

Texas A&M University at Qatar   Aug. 2013 – May 2017
BSc in Electrical Engineering.   Doha, Qatar

- **Minor**: Mathematics.

PUBLICATIONS

Conference Publications

1. **Khaled Nakhleh**, Minhail Raza, Mack Tang, Matthew Andrews, Rinu Boney, Ilija Hadzic, Jeongran Lee, Atefeh Mohajeri, and Karina Palyutina. "SACPlanner: Real-World Collision Avoidance with a Soft Actor Critic Local Planner and Polar State Representations". In: *2023 IEEE International Conference on Robotics and Automation (ICRA). IEEE*. 2023.

2. **Khaled Nakhleh** and I-Hong Hou. "DeepTOP:Deep Threshold Optimal Policy for MDPs and RMABs". In: *Proceedings of the 36th Neural Information Processing Systems (NeurIPS) 2022*. 2022. (Acceptance rate: 25.6%).

3. Daojing Guo, **Khaled Nakhleh**, I-Hong Hou, Sastry Kompella, and Clement Kam. "A Theory of Second-Order Wireless Network Optimization and Its Application on AoI". in: *IEEE INFOCOM 2022 - IEEE Conference on Computer Communications (INFOCOM 2022)*. London, United Kingdom (Great Britain), May 2022. (Acceptance rate: 19.9%).

4. **Khaled Nakhleh**, Santosh Ganji, Ping-Chun Hsieh, I-Hong Hou, and Srinivas Shakkottai. "NeurWIN: Neural Whittle Index Network For Restless Bandits Via Deep RL". in: *Proceedings of the 35th Neural Information Processing Systems (NeurIPS) 2021*. 2021. arXiv: 2110.02128. (Acceptance rate: 25.6%).

Preprints

1. Daojing Guo*, **Khaled Nakhleh***, I-Hong Hou, Sastry Kompella, and Clement Kam. "AoI, Timely-Throughput, and Beyond: A Theory of Second-Order Wireless Network Optimization". *Submitted to the IEEE\ACM Transactions on Networking (ToN) journal.* (2023).

2. Daojing Guo, **Khaled Nakhleh**, Ping-Chun Hsieh, and I-Hong Hou. "Optimal Wireless Scheduling for Remote Sensing through Brownian Approximation". *journal version.* (2021).

* indicates equal contribution.

EXPERIENCE

Nokia Bell Labs   Jun. 2022 – Aug. 2022
AI Research Intern. Host: Dr. Matthew Andrews. (40 hours/week).   Murray Hill, NJ
- **Trained and deployed** reinforcement learning agents for robots' local path planning in non-stationary environments.
- **Developed and tested** automation scripts for the Robot Operating System (ROS) to improve results' reproducibility.
- **Improved** the deployment performance of the RL local planner compared to the baselines (DWA, shortest path, DWA-RL).
- **Presented results** to Bell labs' research groups and researchers from Princeton, Rutgers, and Charles universities.

ECEN Department, Texas A&M University   Jan. 2019 – present
Graduate Fellow/Research Assistant/Teaching Assistant. (20 hours/week).   College Station, TX
- **Conducted** research as part of the computer engineering and systems' group (CESG).
- **Published** four peer-reviewed papers in the areas of reinforcement learning, robotics, and network scheduling.
- **Instructed lectures and lab sessions** for over 200 students of all classifications.

Q.M. Controls   Jan. 2018 – May 2018
Applications Engineering Intern. (40 hours/week).   Doha, Qatar
- **Scheduled and maintained** valve replacement shipments from Germany to Qatar.
- **Configured** valve systems for natural gas and HVAC systems' optimal flow.
- **Processed and presented** technical consultation to clients.

Samson Controls AG   Oct. 2017 – Nov. 2017
Valve Sizing Intern. (40 hours/week).   Frankfurt, Germany
- **Trained** on Samsons valve sizing software, and determined clients ideal valve parameters.
- **Inspected** valve types, materials, actuator sizing techniques, and actuator models.

LEADERSHIP AND COMMUNITY SERVICE

External Reviewer (20 papers in total)

TPEC 2023. NeurIPS 2022. NeurIPS 2023. IEEE\ACM Transactions on Networking (ToN) Journal.

NeurIPS Conference Organizer   2022
Co-organizing the education outreach program for high school students.   New Orleans, LA

Co-founder & Contributor   Aug. 2022 – Present
Texas A&M University Machine Learning (ML) Seminars' Series.   College Station, TX

Professional Development Officer   Jan. 2020 – Present
Electrical and Computer Engineering Graduate Student Association (ECE-GSA).   College Station, TX

CIRTL Associate & Academy for Future Faculty (AFF) Senior Fellow   Jan. 2020 – May 2021
National Science Foundation's Center for the Integration of Research, Teaching, and Learning (CIRTL).   College Station, TX

Graduate and Professional Student Government (GPSG) Senator   Feb. 2020 – May 2021
Electrical and Computer Engineering (ECEN) Department Senator.   College Station, TX

INVITED TALKS

National Center for Educator Development (NCED) Students' Conference   Mar. 2022
Introduction to LaTeX.   Doha, Qatar

Texas A&M Computer Engineering & Systems' Group (CESG) Symposium   Apr. 2021
NeurWIN: Neural Whittle Index Network For Restless Bandits Via Deep RL.   College Station, TX

STUDENTS MENTORED

Austin Keith   Aug. 2021 – May 2022
Undergraduate thesis: "Software-defined wireless network for real-time sensing".   BSc in Electrical Engineering

NON-ACADEMIC PROJECTS

Beyond 5G Challenge By The Air Force Research Laboratory (AFRL)

- **Proposed** a dynamic scheduling algorithm to minimize the age of information of sensory data.
- **Modified** a Software-Defined Network (SDN) controller to implement the algorithm in Python.

Force Request System For The Computer Science Department

- **Led** four teammates as SCRUM master in making a SaaS app for the computer science department at Texas A&M university.
- **Built** the app using Ruby on Rails as backend with A.W.S. and deployed using Heroku.

AWARDS & SKILLS

Awards

IEEE International Conference on Robotics and Automation (ICRA) travel grant (2023).

Texas A&M ECEN department travel award (2023).

NeurIPS scholar award (2022).

Texas A&M ECEN department PhD merit fellowship (2021 - 2022).

Glenn and Deborah Renwick engineering scholarship from the university of Florida (declined).

Skills

Programming languages: Python [PyTorch, Keras, NumPy, Pandas, Matplotlib], C\C++[CMake], LabView, MATLAB, SQL[MySQL], AWK, Bash.

Tools: SLURM, Gurobi, Robot Operating System (ROS), NS-3, Git, Docker, AWS, HPRC, Unix, Kubernetes, LaTeX.

Languages: Fluent in Arabic and English.