

# Hassaan Hashmi

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## RESEARCH INTERESTS

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My current research interests are in model-free wireless autonomy and risk-aware reinforcement learning as a dual of distributionally robust optimization. In a broader sense, I am interested in bilevel stochastic programming emphasizing problem design and analysis.

## EDUCATION

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**Yale University** Sep 2021 – Ongoing  
*Ph.D. in Electrical & Computer Engineering*

**KAIST** Sep 2016 – Jul 2018  
*M.S. in Electrical Engineering*

**National University of Sciences & Technology** Sep 2012 – Jun 2016  
*B.E. in Mechatronics Engineering (Summa cum laude)*

## PUBLICATIONS

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- S. Pougkakiotis, **H. Hashmi**, D.S. Kalogerias, “Data-Driven Learning of Two-Stage Beamformers in Passive IRS-Assisted Systems with Inexact Oracles”. (**Under Review**)
- **H. Hashmi**, S. Pougkakiotis, D.S. Kalogerias, “Model-Free Learning of Two-Stage Beamformers for Passive IRS-Aided Network Design”. (**IEEE TSP ’23**)
- **H. Hashmi**, S. Pougkakiotis, D.S. Kalogerias, “Model-Free Learning of Optimal Beamformers for Passive IRS-Assisted Sumrate Maximization”. (**ICASSP ’23**)
- **H. Hashmi** and D.S. Kalogerias, “Model-Free Learning of Optimal Deterministic Resource Allocations in Wireless Systems via Action-Space Exploration”. (**MLSP ’21**)
- T. Zafar, K. Kamal, Z. Sheikh, S. Mathavan, U. Ali, **H. Hashmi**, “A neural network based approach for background noise reduction in airborne acoustic emission of a machining process”. (**Springer JMST ’17**)

## RESEARCH EXPERIENCE

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**Yale University** Prof. Kalogerias’s group  
*Graduate Research Assistant* 2021 – Present

- **PD-ZDPG+ (MLSP ’21)**: Showed that actor-only policy learning with zeroth-order gradient representations of the Critic outperforms Critic models.
- **ZoSGA (IEEE TSP ’23)**: Developed a two-stage stochastic programming approach to optimize Intelligent Reflecting Surfaces in a highly directional wireless network without any channel or network modeling assumptions.
- **iZoSGA (Under Review)**: Established that the ZoSGA algorithm can achieve appreciable gains in performance given suboptimal and inexact second-stage beamformers.

**National Center of Artificial Intelligence, Pakistan** Intelligent Robotics Lab  
*Research Associate* Jul 2019 – Dec 2020

- **Reinforcement Learning environment for a quadcopter**: Incorporated value/policy learning methods for high-level path-planning and control of a quadcopter in ROS with a MavLink interface. | [code](#)
- **Administrative Team Lead**: Worked with the principal investigators on securing two national-level grants; coordinated the research team to meet the project deliverables in time.

## TALKS

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“Reinforcement Learning, An Overview”, RL Workshop, NCAI, 2020. | [Video Link](#)

## SKILLS

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- **Languages:** Python, C++ , MatLab, TeX, Shell script
- **Software Development:** PyTorch, TensorFlow, JAX, CMake, ROS, OpenCV, Git
- **Hardware Development:** MicroControllers, Motor control boards, Sensor boards, Power circuit boards

## TEACHING

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- TA for EENG 325 Microelectronic Circuits Fall 2022
  - Organized and conducted weekly laboratory tasks complementing the theoretical content of the course.
- TA for EENG 310 Signals and Systems Spring 2023

## ACADEMIC REVIEWING

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- **Journals:** IEEE Transactions on Wireless Communications (TWC), IEEE Transactions on Signal Processing (TSP)
- **Conferences:** IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)

## SELECTED HONORS & AWARDS

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- KAIST Graduate Student Scholarship Sep 2016 - Jul 2018
- NUST Scholarship for Academic Performance Sep 2012 – Jun 2016
- NUST Admission Award (top 15% of admitted students  $\approx$  **0.11%** acceptance) Aug 2012