

# PULOK TARAFDER

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## RESEARCH INTERESTS

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Wireless Networks, mmWave Massive MIMO, Deep Reinforcement Learning, Federated Learning, CRAN

## EDUCATION

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### Chosun University, Gwangju, South Korea

- Masters in Computer Engineering, Grade 4.19/4.5 (96.28%) (expected graduation: Dec 2022)
- Advisor: Wooyeol Choi

### Brac University, Dhaka, Bangladesh

- Bachelor of Science in Electrical and Electronic Engineering (Apr 2019)
- Grade: 3.07/4.0 (3.53/4 in 300 & 400 level courses)
- Senior thesis: [Comprehensive mathematical analysis and simulation design of a microwave wireless power transmission system](#), highest honors

## RESEARCH EXPERIENCE

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### Graduate Research Assistant at [Smart Networking Lab](#)

Dept. of Computer Engineering, Chosun University (Mar 2021 - present)

- Perform research on the channel estimation, applications of deep reinforcement learning and federated learning in mmWave massive MIMO beamforming, and mmWave MAC protocols
- Conference reviewer: ICAHC 2022

### Research Assistant at Control & Applications Research Centre

Dept. of Electrical and Electronic Engineering, Brac University (May 2019 - Feb 2021)

- PSpice Instructor for EEE202 Lab
- Prepared project proposals, project reports, annual reports, reviewed domestic conference papers
- Designed and implemented a torque sensor circuit for the project *Digitalization and Development of Torque Sensor Based Control System of Solar Powered Electric Wheel-chair with a Dedicated Solar Charger Kit*
- Worked on the development and troubleshooting of the project *Double Burner Smart Electric Stove Powered by Solar Photovoltaic Energy*

## SKILLS

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- **Software:** Python (TensorFlow, Keras, PyTorch, OpenAI Gym, NumPy), Matlab,  $\text{\LaTeX}$ , Git, Java, Ansys Electronics (HFSS), Proteus, PSpice, Microwind (layout), DSCH2, Arduino
- **Hardware:** Advance Circuits, Arduino-based Hardware, Microcontroller/Microprocessor-based IoT Devices

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<sup>1</sup>Updated August 3, 2022

## PUBLICATIONS

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### Journals

- J1. **Pulok Tarafder** and Wooyeol Choi\*, "MAC protocols for mmWave communication: A comparative survey," *Sensors*, special issue on "*Theory and Techniques for the Deployment of Future Wireless Sensor Networks in 5G and Beyond*", vol. 22, no. 10, article no. 3853, May 2022. (IF: 3.847 / JCR 2021) [[Paper](#)]

### Conference Proceedings

- C2. **Pulok Tarafder**, Moonsoo Kang and Wooyeol Choi, "A comparative study on centralized MAC protocols for 60 GHz mmWave communications", *International Conference on Information and Communication Technology Convergence (ICTC)*, Jeju, Republic of Korea, October 20-22, 2021 [[Paper](#)]
- C1. Afrin Sultana Meem, Henry Bukenya, Abrar Faisal, **Pulok Tarafder**, A.K. M Abdul Malek Azad, "A qualitative study of current trends in microwave wireless power transmission including current advancements and challenges", *2019 IEEE Region 10 Symposium (TENSYP)*, Kolkata, India, June 07-09, 2019 [[Paper](#)]

## ACADEMIC PROJECTS

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- P5. Self-Balancing Autonomous Unicycle using Raspberry Pi [[Link](#)]  
Description: EEE414 Digital System Design Laboratory project. Designed and developed a novel way to balance a unicycle using Kalman filter algorithm on the gyroscopic data ensuring that the tilt factor is minimized.
- P4. Arithmetic Logic Unit [[Link](#)]  
Description: EEE412 VLSI Design Laboratory project. Designed an ALU circuit from scratch using Export DSCH2.
- P3. A Solar Tracker Using ATmega32 [[Link](#)]  
Description: EEE365 Microprocessors course project. Developed a solar tracker to increase the efficiency by automatically moving the solar panel by tracking the sun.
- P2. The Temperature Box [[Link](#)]  
Description: EEE305 Control System project. This project involved design and implementation of a feedback temperature control system.
- P1. Implemented 4 variable Boolean function on PCB using Proteus.

## ORGANIZATION AND OUTREACH ACTIVITIES

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- Attended IEEE ICC, Seoul, South Korea (16–20 May 2022)
- IEEE Graduate Student Member (Sept 2021 - present)
- Event Organizer, Brac University Electrical and Electronic Club (Feb 2014 - Dec 2018)
- Creative Designer, Robotics Club of Brac University (Jan 2014 - Dec 2016)
- Math and ICT tutor at Swarabarna Academic Care, Dhaka, Bangladesh (Nov 2015 - Apr 2017)
- Private O'Levels and A'Levels Math, Physics and Chemistry tutor (Dec 2016 - Feb 2021)

## ACHIEVEMENTS

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- 1st runner-up at Automated Guided Vehicles (AGV) showcase competition, Techshopbd, Dhaka, Bangladesh (Nov 2015)
- Full-ride Research Assistant Scholarship for masters at Chosun University, Gwangju, South Korea