

# TANVIR AHMED

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## RESEARCH INTERESTS

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Wireless Sensing, Signal Processing (mmWave/Acoustic/Wi-Fi), AI/ML in Healthcare

## EDUCATION

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### Cornell University

Ph.D. in Information Science (GPA: **4.18**/4.3)

Ithaca, NY 14850, US

Aug 2023 - Aug 2028 (*Expected*)

- Committee: [Rajalakshmi Nandakumar](#) (Chairperson), [Deborah Estrin](#), and [Noah Snaveley](#).
- [Digital Life Initiative \(DLI\) Doctoral Fellow](#), Class of 2025-26, Cornell Tech.

### Bangladesh University of Engineering and Technology (BUET)

M.Sc. in Electrical & Electronic Engineering (GPA: **3.83**/4.00)

Dhaka, Bangladesh

Apr 2019 - Jul 2023

- Thesis: Image Super-Resolution Using Wavelet Residual Convolutional Neural Networks [[open access online](#)].
- Committee: [S. M. Mahbubur Rahman](#) (Chairperson), [Shaikh Anowarul Fattah](#), [Mohammed Imamul Hassan Bhuiyan](#), [Md. Hasanul Kabir](#), and [Md. Aynal Haque](#).

### Bangladesh University of Engineering and Technology (BUET)

B.Sc. in Electrical & Electronic Engineering (GPA: **3.82**/4.00)

Dhaka, Bangladesh

Feb 2015 - Apr 2019

- Thesis: Detection of Traffic Signs from Live Streaming Videos. Advisor: [S. M. Mahbubur Rahman](#).

## ONGOING RESEARCH PROJECTS

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### Contactless Human Motion and Sleep Study Using mmWave Radar

Aug 2024 - *Present*

- Using multi-view mmWave FMCW radars for contactless monitoring of human motion and vital signs.
- Faculty advisors: [Rajalakshmi Nandakumar](#), [Ana C. Krieger](#) (Weill Cornell Medicine).

### Responsible Wireless Sensing

Aug 2024 - *Present*

- Towards a general privacy framework for wireless sensing technologies (mmWave, Acoustic, Wi-Fi) to ensure freedom, security, and quality of life.
- Faculty advisors: [Rajalakshmi Nandakumar](#), [Thijs Roumen](#) (Cornell Tech).

## PUBLICATIONS<sup>†</sup>

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### [P1] SoilSound: Smartphone-based Soil Moisture Estimation

Gao, Y., [Ahmed, T.](#), He, S., Cheng, Z. & Nandakumar, R.

[[arXiv:2509.09823](#)]

- Under review in the *32nd Annual International Conference on Mobile Computing and Networking*, November, 2026, Austin, Texas, USA. ([MobiCom 2026](#))

### [C4] VitalHide: Enabling Privacy-Aware Wireless Sensing of Vital Signs

\*Gao, Y., \*[Ahmed, T.](#), Chang, Z., Roumen, T. & Nandakumar, R.

[[open access online](#)]

- In Proc. of the *26th International Workshop on Mobile Computing Systems and Applications*, February 26-27, 2025, California, USA. ([ACM HotMobile'25](#))
- [Acceptance rate](#): 40%.
- [News](#): [Poster @ NYC Privacy Day at Google – Fall 2024](#), [Cornell Tech News](#), [Cornell Chronicle](#), [ACM Showcase](#).

\*equal contribution.

<sup>†</sup>Google Scholar: <https://scholar.google.com/citations?user=YVYJ13QAAAAJ&hl=en>

### [C3] Feasibility of Radio Frequency Based Wireless Sensing of Lead Contamination in Soil

Gao, Y., [Ahmed, T.](#), Cheng, Z., Mohammed, M. & Nandakumar, R. [\[open access online\]](#)

- In Proc. of the *21st International Conference on Embedded Wireless Systems and Networks*, December 10-13, 2024, Abu Dhabi, UAE. ([EWSN'24](#))
- [Acceptance rate](#): 22.86%.
- [News](#): [Best Paper Award](#), [Cornell Chronicle](#), [Phys.org](#), [MSN](#), [American Technion Society](#), [KARMACTIVE](#).

### [J1] Biomimicry in Nanotechnology: a Comprehensive Review

Himel, M. H., Sikder, B., [Ahmed, T.](#) & Choudhury, S. M.

[\[open access online\]](#)

- In *Nanoscale Advances* 5, no. 3 (2023): 596-614.

### [C2] COVID-19 Identification From Lung CT Scans in a Low-Resource Setting Using a Regularized 3D Convolutional Neural Network

[Ahmed, T.](#), Nakib, M., Haque, M. A., & Miah, M. M. M.

[\[pre-print\]](#) | [\[IEEE Xplore library\]](#)

- In Proc. of the *12th International Conference on Electrical and Computer Engineering*, December 21-23, 2022, Dhaka, Bangladesh. ([ICECE](#))

### [C1] Epileptic Seizure Prediction Using Bandpass Filtering and Convolutional Neural Network

Mustaqeem, N., Rahman, T., Priyo, J. F. B. K., Parvez, M. Z., & [Ahmed, T.](#) [\[pre-print\]](#) | [\[Springer library\]](#)

- In Proc. of the *1st International Conference on Machine Intelligence and Emerging Technologies*, September 23-25, Noakhali, Bangladesh. ([MIET](#))

## SERVICE

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- Reviewer: [ACM DIS 2025](#), [ACM CHI 2025 \(Case Studies\)](#), [UbiComp/ISWC 2025 \(Notes and Briefs\)](#)
- Topic Chair: [IEEE ECCE 2025](#)
- Student Volunteer: [ACM HotMobile 2025](#)

## WORK EXPERIENCE

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### Cornell Tech

2 W Loop Rd, New York, NY 10044, US

- Ph.D. Student Researcher @ Wireless Sensing and Mobile Systems Lab Aug 2023 - *Present*
- Graduate Teaching Assistant Appointments: [ECE 5260/ORIE 5735 Graph-Based Data Science for Networked Systems \(Spring 25\)](#), [CS/INFO 5304 Data Science in the Wild \(Spring 24\)](#), [INFO 5600 AI for Healthcare \(Fall 23, 24\)](#).

### Brac University

Dhaka, Bangladesh

- [Lecturer](#) @ [Department of Computer Science and Engineering](#) Jan 2020 - Aug 2023
- Courses Instructed: CSE 460 VLSI Design, CSE 428 Image Processing, CSE 350 Digital Electronics and Pulse Techniques, CSE 251 Electronic Devices and Circuits, CSE 250 Circuits and Electronics.

## SCHOOL PROJECTS

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- Peer-to-peer computational resource sharing in networked edge devices [\[report\]](#)
- Impact of multi-avatar and camera perspective on self-presence in VR [\[report\]](#)
- Performance analysis of privacy-preserving logistic regression classifiers on the MNIST dataset [\[report\]](#) [\[code\]](#)
- Segmentation of ground-glass opacity from COVID-19-infected lung CT scans [\[report\]](#) [\[code\]](#)

- Sign-language digit classification with explainable AI [\[report\]](#) [\[code\]](#)
- Stage spotlight automation using deep learning and micro-controllers [\[code\]](#)
- Design, implementation & verification of 32-bit MIPS processor [\[code\]](#), 8×8 Booth-encoded multiplier [\[report\]](#)
- Real-time ECG monitoring and disease detection using Arduino, ECG chip, and WiFi module [\[report\]](#)

## TECHNICAL SKILLS

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Programming Languages:	Python, C, C++, Assembly, Verilog
Machine Learning Libraries:	TensorFlow, Keras, PyTorch, Scikit-learn, MLX
Circuit Design & Simulation:	PSpice, Proteus, Quartus, Cadence
Numerical Analysis:	MATLAB, Numpy, SciPy
Google Workspace:	Docs, Sheets, Slides, Colab
Writing & Presentation:	Microsoft Word, Microsoft PowerPoint, L <sup>A</sup> T <sub>E</sub> X
Millimeter wave:	mmWave Studio
USRP:	GNU Radio
Sleep Medicine:	Rem Logic

## HONORS & AWARDS

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- **Digital Life Initiative (DLI)** [Doctoral Fellow](#), Cornell Tech 2025-26
- **Student Travel Grant Recipient**, ACM HotMobile '25, California, USA 2025
- **Student Travel Grant Recipient**, EWSN'24, Abu Dhabi, UAE (unable to attend due to visa issues) 2024
- **Photo Contest Winner**, “Tech Innovation in Frame” category, Cornell Tech, USA 2023
- **Undergraduate Degree Awarded with Honors** (Cumulative GPA  $\geq 3.75$ ), BUET 2019
- **Dean’s List Award** (Academic Year GPA  $\geq 3.75$ ), BUET 2015, 2016, 2018
- **University Merit Award**, BUET 2015, 2016, 2017, 2018
- **National Idea Competition**, Top 10, Ministry of Power, Energy & Mineral Resources, Bangladesh 2017
- **National Physics Olympiad**, 1<sup>st</sup> position, St. Joseph Higher Secondary School, Dhaka, Bangladesh 2014
- **Bangladesh Physics Olympiad**, 7<sup>th</sup> position, Dhaka Divisional, Bangladesh 2014