Ahmed Tahseen Minhaz

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Department of Biomedical Engineering
Case Western Reserve University
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Education

Case Western Reserve University   Expected 2023
PhD, Biomedical Engineering

Bangladesh University of Engineering and Technology
M.Sc., Electrical and Electronic Engineering   2018
B.Sc., Electrical and Electronic Engineering   2016

Research and Professional Experience

Biomedical Imaging Laboratory   August 2018-
Graduate Research Assistant; Advisor: Dr. David L. Wilson
- Developed a 3D ultrasound imaging system and image analysis tools using machine and deep learning approaches for measurements of ocular structures and treatment monitoring.

Semion Inc.
Computer Vision Researcher; Advisor: Dr. Khalid Ashraf   November 2016- Feb 2018
- Developed the first commercially available product in Bangladesh for chest X-ray screening based on deep learning approaches.

EUProW Lab, Bangladesh University of Engineering and Technology
Undergraduate Research Assistant; Advisor: Dr. Celia Shahnaz   Summer 2015- July 2018

- Developed apnea detection approach from EEG signal features in patients with sleep apnea syndrome. (B.Sc. project)
- Developed a generative adversarial network-based speech enhancement approach using wavelet features. (M.Sc. dissertation)

Honors and Awards

- Best poster award, *cum laude,* SPIE Medical Imaging 2022, San Diego
- Travel award, SPIE Medical Imaging 2022, San Diego
- Winner, Annual Cleveland Medical Hackathon 2018
- Bangladesh-Sweden Trust Fund 2018
- Dean's list, BUET

Patents

- "Processing three-dimensional (3d) ultrasound images"- US Patent No. 20210383548A1– Published December 9, 2021

Conference Presentations

[1]   Minhaz, A. T., Cooley, M., Subramaniam, A., Exner, A., Orge, F., Wilson, D., & Bayat, M. (2022, October). End-to-end deep learning for tuning-free non-contrast ultrasound microvessel imaging. In 2022 IEEE International Ultrasonics Symposium (IUS) (pp. 1-3). IEEE.

[2]   A. T. Minhaz, M. Bayat, F. Orge, and D. L. Wilson, "Deconvolution and improved visualization of ocular structures in UBM using deep learning," in 2020 IEEE International Ultrasonics Symposium (IUS), Sep. 2020, pp. 1–3, doi: 10.1109/IUS46767.2020.9251648. Citation: 1

[3]   A. T. Minhaz et al., "Deconvolution of ultrasound biomicroscopy images using generative adversarial networks to visualize and evaluate localization of ocular structures," presented at the SPIE Medical Imaging, San Diego, CA, USA, Feb. 2021.

[4]   A. T. Minhaz et al., "Comparison of manual and automated 3D measurements of ciliary body in three dimensional ultrasound biomicroscopy (3D-UBM) images.," Invest. Ophthalmol. Vis. Sci., vol. 61, no. 9, pp. PB0051–PB0051, Jul. 2020.

[5]   A. T. Minhaz et al., "3D ultrasound biomicroscopy (3D-UBM) imaging of the eye for unique 3D assessment of ciliary body," in Medical Imaging 2020: Ultrasonic Imaging and Tomography, Houston, United States, Mar. 2020, p. 27, doi: 10.1117/12.2549846.

[6]   H. Wu et al., "3D ultrasound biomicroscopy (3D-UBM) imaging and automated 3D assessment of the iridocorneal angle for glaucoma patients," in Medical Imaging 2019: Ultrasonic Imaging and Tomography, Mar. 2019, vol. 10955, p. 109550U, doi: 10.1117/12.2513072.

[7]   C. Shahnaz and A. T. Minhaz, "Sleep Apnea frame detection based on Empirical Mode Decomposition of delta wave extracted from wavelet of EEG signals," in 2016 IEEE International WIE Conference on Electrical and Computer Engineering (WIECON-ECE), Dec. 2016, pp. 233–236, doi: 10.1109/WIECON-ECE.2016.8009125.

[8]   C. Shahnaz, A. T. Minhaz, and S. T. Ahamed, "Sub-frame based apnea detection exploiting delta band power ratio extracted from EEG signals," in 2016 IEEE Region 10 Conference (TENCON), Nov. 2016, pp. 190–193, doi: 10.1109/TENCON.2016.7847987.

[9]   M. T. Islam, M. N. Shaan, E. J. Easha, A. T. Minhaz, C. Shahnaz, and S. A. Fattah, "Enhancement of noisy speech based on decision-directed Wiener approach in perceptual

wavelet packet domain," in TENCON 2017 - 2017 IEEE Region 10 Conference, Nov. 2017, pp. 2666–2671, doi: 10.1109/TENCON.2017.8228313.

[10] S. Noor, E. A. Dhrubo, A. T. Minhaz, C. Shahnaz, and S. A. Fattah, "Audio Visual Emotion Recognition Using Cross Correlation and Wavelet Packet Domain Features," in 2017 IEEE International WIE Conference on Electrical and Computer Engineering (WIECON-ECE), Dec. 2017, pp. 233–236, doi: 10.1109/WIECON-ECE.2017.8468871.

Journals

[1] Minhaz, A.T.,' Sevgi, D.D., Kwak, S., Kim, A., Wu, H., Helms, R.W., Bayat, M., Wilson, D.L. and Orge, F.H., Deep Learning Segmentation, Visualization, and Automated 3D Assessment of Ciliary Body in 3D Ultrasound Biomicroscopy Images," Trans. Vis. Sci. Tech., 11(10), 3-3 (2022).

[2] Helms, R. W., Minhaz, A. T., Wilson, D. L. and Örge, F. H., "Clinical 3D Imaging of the Anterior Segment With Ultrasound Biomicroscopy," Trans. Vis. Sci. Tech. **10**(3), 11–11 (2021).

[3] Islam, M. T., Aowal, M. A., Minhaz, A. T. and Ashraf, K., "Abnormality Detection and Localization in Chest X-Rays using Deep Convolutional Neural Networks," arXiv:1705.09850 [cs] (2017).

Planned Journals

[1] Deconvolution of ultrasound biomicroscopy images using generative adversarial networks to visualize and evaluate localization of ocular structures

Teaching Experience

Teaching Assistant
UNIV 400: Future Faculty Certificate
EBME 602: Special Projects (Spring 2020)
- Assisted students in designing biomedical instrumentation and signal processing projects.

EBME 401D: Biomedical Instrumentation and Signal Processing (Spring 2021)
EBME 308: Biomedical Signals and Systems (Fall 2021)
- Assisted faculties in preparing and grading homework assignments and exams.

Leadership Experience

Bangladeshi Students Association
President   Fall 2019-Spring 2021
Treasurer   Fall 2018-Spring 2019
- Co-founded the organization to create a community for Bangladeshi students on campus.
- Organized 4 cultural events and a career seminar featuring prominent Bangladeshis in academia and industry.

Underrepresented Minorities in Biomedical Engineering (UMBE)
Treasurer   Fall 2020-Spring 2021

- Creating budget and managing funds for invited speaker series on health disparity and outreach events in Cleveland to promote recruitment of minority students.

References

David L. Wilson, PhD
Robert J. Herbold Professor of Biomedical Engineering and Radiology
Case Western Reserve University
Email: dlw@case.edu

Faruk H. Örge, MD
William R. and Margaret E. Althans Chair and Professor
Director, Center for Pediatric Ophthalmology and Adult Strabismus
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