Md Wahidur Rahman

📍 Dhaka, Bangladesh

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Education

Master of Science in Biomedical Engineering   **CGPA − 4.00 out of 4.00**
Bangladesh University of Engineering & Technology, Dhaka   May 2021 − May 2023 (Expected)
Class Position: 1st

Bachelor of Science (with honors) in Biomedical Engineering   **CGPA − 3.91 out of 4.00**
Bangladesh University of Engineering & Technology, Dhaka   Feb. 2016 − Feb 2021
Class Position: 2nd

Research Interest

Tissue engineering & regenerative medicine, Biomaterials & nanomaterials, Stem cells, Bioprinting & bioink, Experimental soft & hard tissue biomechanics.

Research Experience

M.Sc. Thesis (Ongoing): Preparation & Characterization of Decellularized Scaffold for Skin Tissue
Supervisor: Dr. Muhammad Tarik Arafat, Professor, Department of Biomedical Engineering, BUET
- Currently working on the preparation of decellularized skin scaffold for wound or burn patient.

Undergraduate Thesis: Synthesis and Characterization of Chitosan-Based Nanoparticles
Supervisor: Dr. Muhammad Tarik Arafat, Professor, Department of Biomedical Engineering, BUET
- Prepared Chitosan nanoparticles by ionic gelation techniques with different naturally obtained gums.
- Characterized the prepared nanoparticle using SEM, TEM, FTIR, XRD, DLS techniques.
- Selected the best combination and used it for potential application, including- ocular drug delivery & wound healing

Research Assistant   April 2019 − Ongoing
BioInnovation Research Group, Department of Biomedical Engineering, BUET   Dhaka, Bangladesh
- Helped to prepare a proposal on skin tissue engineering which was awarded internally from university body.
- Managed day to day activities in the lab and trained new members of the group on lab cultures, safety, and equipment.
- Conducted several Workshops on Biomaterial-Based Wet Lab to disseminate the knowledge and skills to the community.

Publications

M. W. Rahman and M. T. Arafat, **Gellan and xanthan-based nanocomposites for tissue engineering,**
Polysaccharide-Based Nanocomposites for Gene Delivery and Tissue Engineering, Elsevier, pp. 155–190, 2021

Awards & Honors

Dean's List Award for Excellent Scholarly Achievement   **2016 − 2021**
Bangladesh University of Engineering & Technology   All 4 levels of study

University Merit Scholarship   **2016 − 2021**
Bangladesh University of Engineering & Technology   All 8 semesters of study

Academic Projects

Hospital Based Medical Device: Finding Needs | *Report* | *Presentation*   **2021**
- Collected data from dental unit and the ENT unit to get real-life experience for collaborating with medical personnel.
- Identified current complex problems in the medical device industry of Bangladesh that need engineering solutions.

Smart EEG Helmet for Cognitive Load Analysis of Motorcyclists | *Presentation*   **2018**
- Integrated comb electrode and conducting tape in a helmet to collect real-life EEG signals from motorcyclists.
- Quantified the collected signals in α, β, γ, δ, & θ spectrum and found correlation between drowsiness and brain signal.
- Used perception based binary classifier ML algorithm to detect drowsiness from the signals and sent alert to the user.

Body Fat Measuring Device | *Report*   **2018**
- Made a non-invasive, user-friendly capacitance based body fat percentage measuring device.
- Collected data from more than 40 adults to correlate with the available methods to measure body fat percentage.
- Used linear regression to deduct a formula and showed calculated body fat percentage directly in a MATLAB GUI.

Professional Experience

Lecturer   **March 2021 – Ongoing**
Department of Biomedical Engineering, BUET   Dhaka, Bangladesh
- **Conducting Classes:** Prepared engaging lesson plans for undergraduate students, assigned homework, graded tests, and documented progress. Guided students on real-life complex engineering projects.
- **Curriculum & Laboratory Improvement:** Currently involved with ongoing curriculum development focusing on Outcome-Based Education (OBE) for ABET accreditation. Also developed newer experiments in the lab.
- **Additional Responsibilities:** Handled official and administrative responsibilities such as- staff development, report writing, website development, arranging seminars, workshops, and different functions in the department.

Relevant Workshop & Training

Training on Laboratory Animal for Designing Animal Experiments at ICDDR,B   **June 2022**
- Learned how to handle mice, rat, guinea pig, and rabbit models and how to deliver drug into them. Also was taught about the hygiene, breeding, gavazing, and blood collection procedures from the models.
- Learned about the ethical considerations on handling the animal model. Also learned about how to anesthetize them or euthanize them according to AEC guidelines.

Industrial Attachment Program for Biomedical Engineer   **April 2019**
- Went to country-best medical school- Dhaka Medical College & Hospital for industrial attachment.
- Got introduced to different medical devices and identified problems that are needed to solve.

Relevant Coursework

M.Sc. Level
- Advanced Biomaterials
- Regenerative Medicine
- Chemistry of Polymers
- Advanced Drug Delivery
- Advanced Biophysics
- Translational Neural Engineering

B.Sc. Level
- Tissue Engineering
- Biomechanics & Biofluid Mechanics
- Biomaterials & Bionanomaterials
- Molecular Biology
- Human Anatomy & Physiology
- Biomedical Instrumentations
- Organic Chemistry & Biochemistry
- Magnetic Resonance Imaging
- Biomedical Transport Fundamentals

Technical Skills

Programming Languages: MATLab, C, Python, R, Wolfram Mathematica, Arduino, LaTeX
Simulation: Solidworks, Abaqus, Simulink, Ansys, COMSOL, Tina-Ti
Design & Imaging: BioRender, ImageJ/FiJi, ChemDraw
Graphing & Reference Softwares: OriginLab, Mendeley, EndNote
Others: Microsoft Office, Adobe Illustrator, Adobe Photoshop

Standardized Tests

TOEFL: **110**/120; Listening: **30**/30, Reading: **29**/30, Writing: **28**/30, Speaking: **23**/30   **July 31, 2022**

GRE: **328**/340; Quant: **169 (94th Percentile)**, Verbal: **159 (82nd Percentile)**, AWA: **4.0**   **June 2, 2022**

Leadership & Extracurricular

Coordinator (Logistics), Bangladesh Biology Olympiad   **January 2018**
Dhaka-South Regional competition held at Department of BME, BUET   Dhaka, Bangladesh

Publication Secretary, NCTF-Save the Children   **February 2012 – March 2013**
Published a bi-monthly newspaper, promoting children rights and activities.   Pabna, Bangladesh

Winner, I-Genius   **December 2012**
A competition to promote internet among the youth of Bangladesh.   Pabna, Bangladesh