

Arghamitra Talukder

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EDUCATION

09/23-Present	Columbia University PhD in Computer Science Advisors: Itsik Pe'er, David Knowles	New York, NY
01/18 -05/21	Texas A&M University BS in Electrical Engineering GPA:3.78 Engineering Honors, Magna Cum Laude	College Station, TX

RESEARCH EXPERIENCE

07/20-12/22	Predicting Inter-Protein Contact Maps with Multi-Modal and Multi-Task Learning <i>Undergraduate Research Scholar, Texas A&M University</i> Advisor: Dr. Yang Shen <ul style="list-style-type: none">Developed a novel algorithm to predict inter-protein contact map by multi-modal data fusion and embeddings: protein sequence and structure embedded with HRNN, GAT and pre-trained BERT.Analyzed the impact of auxiliary task learning via pre-training and multi-tasking.Developed an automatic Linux-based framework to manage parameter-tuning, model training and evaluation using High Performance Computer Facility.	College Station, TX
06/19-01/21	Wearable Device Development to Measure Continuous Blood Pressure <i>REU, ESP Lab, Texas A&M University</i> Advisor: Dr. Roozbeh Jafari <ul style="list-style-type: none">Developed a cuffless system to measure continuous blood pressure using bioimpedance and multi-frequency current injection.Designed and conducted more than 50 experiments to compare multi-frequency current, dry and ECG electrode and identified the relation between electrode positioning and Bio-Z signal.Developed MATLAB code for post-experimental data analysis and physical model simulation of artery and blood flow.	College Station, TX
08/18-12/18	Smart watch app to support veterans with Post Traumatic Stress Disorder (PTSD) <i>ACE Lab, Industrial Engineering, Texas A&M University</i> Advisor: Dr. Farzan Sasangohar <ul style="list-style-type: none">Designed and developed biofeedback to control breathing exercise and monitor the heart rate which got a 5 star in usability and product testing as one of the fast-accessing options.Remodeled therapy option adding visual and audio aid to provide a better therapeutic service acted as an instant remedy of PTSD attack.	College Station, TX

PROJECTS

01/21-05/21	Deep Q Learning (DQN) to Improve Performance Recovery in Noisy Group Testing <i>Reinforcement Learning (Graduate Course)</i> Instructor: Dr. Dileep Kalathil <ul style="list-style-type: none">Implemented DQN with multiple agents (NNs) to learn multiple action-value functions in parallel (one agent for each BP iteration) for the state and reward.Studied the success probability with known and unknown defective variables over a multiple range of episode numbers.	College Station, TX
01/20-05/20	Kaggle Competition, "Bag of Words Meets Bags of Popcorns" <i>Introduction of Machine Learning (Undergraduate Course)</i> Instructor: Dr. Dileep Kalathil <ul style="list-style-type: none">Worked with Natural Language Processing to extract feedback from IMDB reviews; for pre-processing used Bag of Words and Word to Vector.Addressed the problem with binary logistics regression, FC network, CNN and obtained 98% prediction accuracy.	College Station, TX

PUBLICATION & PRESENTATION

Does Inter-Protein Contact Prediction Benefit from Multi-Modal Data and Auxiliary Tasks?

Arghamitra Talukder, Rujie Yin, Yang Shen, Yuning You

- 12/22 • [Conference paper](#): Accepted at Machine Learning in Structural Biology, NeurIPS.
- 05/21 • [Oral presentation](#): (2nd position out of 75 projects): Electrical Engineering Board Member Presentation, Texas A&M University.

Multi-source Multi-frequency Bio-impedance Measurement Method for Localized Pulse Wave Monitoring

Bassem Ibrahim, Arghamitra Talukder, Roozbeh Jafari

- 11/20 • Oral presentation: ("Excellence in Research" award): Data Science, Electrical Engineering division, Gulf Coast Undergrad Research Symposium, Rice University.
- 07/20 • [Conference paper](#): Accepted at IEEE Engineering in Medicine and Biology Society.

Smart Watch App to Support Veterans with PTSD

Arghamitra Talukder, Farzan Sasangohar

- 01/18 • *Oral presentation*: Medical, Biological and Neural innovation, Electrical Engineering division, Gulf Coast Undergrad Research Symposium, Rice University.

FELLOWSHIP & SCHOLARSHIP

12/22 **MLSB, NeurIPS'22 Travel Award**

- Registration allowance to join Machine Learning in Structural Biology workshop.

08/22-Present **CISE CSGrad4US Fellowship, CRA, NSF**

- Cost-of-education (PhD) allowance of \$12,000/year to the institution of higher education with an annual stipend of \$34,000 for 3 years.

WORK EXPERIENCE

06/21-08/23 **Product/Test Engineer**

Texas Instruments

Dallas, TX

- Responsible for TI customed Ultra-High Voltage test technology development with 150% cost efficiency.
- Created a product specific test program converting from legacy tester to the latest technology reducing 40% of the test time.

06/20-08/20 **Product/Test/Validation Intern**

Texas Instruments

Dallas, TX

- Enabled traceability with the accuracy of 99.9% by device ID recovery with OCR technology.
- Automation of data acquisition, validation and code implementation by SQL and PERL.

Peer Mentor

Engineering Academics, Texas A&M University

College Station, TX

01/19-12/19 **Experimental Physics and Engineering Lab II-Mechanics (Instructor: Anthony Cahill)**

- Supervised lab class of 50 students with experimental data collection and post analysis; 4.8/5.0 review received.

08/18-12/18 **Foundation of Engineering (Instructor: Michael Powell)**

- Guided class of 80 students on introductory Python and LabVIEW: 4.2/5.0 review received.

VOLUNTEERING EXPERIENCE

05/19 **Texas A&M Physics and Engineering Festival**

College Station, TX

- Led experiment demonstrations as part of Electrical Engineering Honors team.

05/18 **High School Idea Challenge**

College Station, TX

- Supervised event organization and mentorship program of a group of high school students.

01/18-05/21 **Bangladesh Student Association, Texas A&M University**

College Station, TX

- Organized and volunteered in more than 10 cultural events and social gathering including freshers' reception and International Mother Language Day.