

Shahariar Ifti

Research Assistant

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RESEARCH INTERESTS

Human-centered design of technology for underserved populations; machine learning that generalizes across individuals (personalization, subject-independent evaluation); wearable and physiological sensing for stress and mental health; low-cost health technology for the Global South.

EDUCATION

- North South University** Dhaka, Bangladesh
Bachelor of Science in Computer Science & Engineering; CGPA: 3.44/4.00 Dec 2024
Relevant Coursework: Data Structures and Algorithms, Design and Analysis of Algorithms, Operating Systems Design, Database Systems, Machine Learning, Pattern Recognition and Neural Network, Theory of Computation

HSC: Notre Dame College (2018), GPA 5.00/5.00; **SSC:** Monipur High School (2016), GPA 5.00/5.00

English Proficiency: IELTS Academic (Jul 2026) – Overall 7.0 (CEFR C1); L 7.0, R 7.0, W 6.0, S 8.0

PUBLICATIONS

Published

- Spondon: A Low-Cost, Multi-Sensor Wearable for Understanding Stress in Resource-Constrained Countries** ACM COMPASS '26
Shahariar Ifti, Rahat Jahangir Rony, Shuvashish Chakraborty, Asif Mahbub, Nova Ahmed Short Paper | DOI | Code
Summary: Designed an ESP32-based multi-sensor wearable (MAX30102, GSR, temperature) from locally available sensors (about US\$46) to monitor stress in resource-constrained environments. Evaluated on 15 participants using the Stroop test: skin conductance rose significantly during stress (Wilcoxon, $p < 0.001$), while HRV (RMSSD) fell by 7.95%. Using leave-one-subject-out (LOSO) cross-validation to test generalization to unseen individuals, a Random Forest classifier with personalized baseline normalization achieved 75.0% accuracy in binary acute stress detection and 58.4% in multi-class continuous monitoring.

Under Review

- “My Mind Is a Combination of My Body, My Money, and My Study”: Contextualizing Mental Health Support Ecologies for Tertiary Students in Bangladesh** ACM CHI '27
Co-author Under Review
- SHONCHALON: A Wearable for Real-Time Multi-Class Exercise Recognition and Feedback in Post-Stroke Upper-Limb Rehabilitation** IEEE PerCom '27
Co-author Under Review

In Preparation

- Technology Adoption among Low-Literate Women** Target: ACM IMWUT
Manuscript in preparation (Co-learning & Familiarization Project)
- Long-Term Stress among Physicians during the COVID-19 Pandemic** Target: JMIR Mental Health
Manuscript in preparation, with Cardiff University, UK

EXPERIENCE

- Research Assistant (Full-time)** Design Inclusion and Access Lab (DIAL), NSU
Supervisor: Dr. Nova Ahmed Jun 2024 – Present
HCI research on health and wellbeing: developing custom wearable hardware, collecting and analyzing physiological health data (HRV, GSR, IMU) with ML and DL models, conducting literature reviews and mixed-methods studies, and contributing to publications.
- Teaching Assistant** Department of Mathematics & Physics, NSU
Led discussion sessions, graded assignments, and mentored students. Jan 2023 – Jun 2023

RESEARCH PROJECTS

- HEAT Subproject (World Bank-funded)** DIAL, NSU
Research Assistant Jan 2026 – Present
Status: Ongoing; co-authored paper under review at ACM CHI '27. Nationwide mixed-methods study assessing the mental health of tertiary-level students in Bangladesh and identifying technological solutions. Shortlisting participants via PSS/PHQ-9 scales for physiological stress monitoring and co-designing AI-driven interventions.
- Co-learning & Familiarization Project** DIAL, NSU
Research Assistant Jun 2025 – Present
Status: Ongoing; manuscript in preparation for ACM IMWUT. Analyzing technology adoption among low-literate women through regional workshops. Developed custom hardware to measure physiological stress variability and implemented a family-based mentoring framework.
- SHONCHALON: Wearable for Post-Stroke Upper-Limb Rehabilitation** DIAL, NSU
Research Assistant Jun 2024 – Oct 2025
Status: Under review at IEEE PerCom '27. Developed a low-cost wearable using an ESP32-BLE and ICM20948 IMU (accelerometer, gyroscope, and magnetometer) to recognize five essential rehabilitation exercises and assess the correctness of hand movements. Integrated a custom Android application via Bluetooth for real-time 5 Hz data logging and analyzed the data.

- From Travel Experience to Mobility Evaluation: A Real-Time Behavioural Study of Urban Commuting in Dhaka**

DIAL, NSU & University of Leeds, UK

Research Assistant, with Dr. Charisma F. Choudhury

Jul 2026 – Present

Status: Ongoing. Investigating the physiological stress of commuters by integrating smartphone-based experience sampling with continuous physiological data (Empatica EmbracePlus). Analyzing multi-modal data (heart rate, EDA, skin temperature, self-reported stress) to evaluate mobility and mode preferences.
- Long-Term Stress among Physicians during COVID-19**

Cardiff University, UK

Research Assistant, with Dr. Rahat Jahangir Rony and Dr. Naeima Hamed

Apr 2026 – Present

Analyzing long-term stress among physicians during the COVID-19 pandemic; manuscript in preparation for JMIR Mental Health.
- Cross-Cultural Safety for Youth in GenAI (Bangladesh Team)**

Pennsylvania State University, USA

Research Assistant, project led by Dr. Tanusree Sharma

Jun 2026 – Present

Contributing to a ChatGPT prompt-based study of teenagers in Bangladesh, including study coordination and transcription.

SELECTED PROJECTS

- Ambient Environment and Sleep Time Monitoring Wearable**

Course Project (CSE 323)

github.com/Sh-Ifti/sleep-monitoring-wearable

Jun 2024

Built a low-cost Arduino wrist wearable with an MPU6050 accelerometer, PPG pulse sensor and light sensor, streaming data over Bluetooth (HC-05). Estimated sleep duration from windowed movement analysis in Python and assessed the sleep environment from ambient light and heart rate.
- OnnoMitro: Personalized Bangladeshi Meal Recommendation System**

Senior Design Project (CSE 499)

github.com/Sh-Ifti/onnomitro-meal-recommender

Jan 2024 – Dec 2024

Curated a novel dataset of 305 Bangladeshi recipes through web scraping, with per-serving nutrition from the Edamam API, and built a Flask web app that recommends meals matched to each user’s metabolic rate, activity level and goal. Daily recommendations deviated from calorie targets by a median of 22 kcal (MAE 85.84 kcal) across 50 test users. Team of three, supervised by Dr. Sifat Momen. Tools: Python, Flask, pandas, Beautiful Soup, MySQL, JavaScript.
- Predicting Airbnb Listing Prices in Europe**

Machine Learning Project

github.com/Sh-Ifti/airbnb-price-prediction-europe

Feb 2024 – Jun 2024

Compared six regression models (Linear, Ridge, SVR, Decision Tree, Random Forest, Gradient Boosting) for predicting listing prices across ten European cities; Random Forest performed best (test $R^2 = 0.854$ vs. 0.656 baseline). Tools: Python, scikit-learn, pandas, NumPy, Matplotlib.
- Flood Mapping of Bangladesh**

Junior Design Project

github.com/Sh-Ifti/bangladesh-flood-mapping

Jul 2023 – Dec 2023

Produced flood inundation maps of Bangladesh for 2020–2022 from Sentinel-1 SAR imagery in Google Earth Engine (UN-SPIDER change-detection method), plus statistical visualizations of historical flood data from the Bangladesh Water Development Board. Tools: JavaScript, Google Earth Engine.

PROFESSIONAL SERVICE

- Reviewer, ACM SIGCAS/SIGCHI Conference on Computing and Sustainable Societies (COMPASS 2026), Posters Track

SKILLS SUMMARY

- Sensing & Hardware:** ESP32, Arduino, BLE, ICM20948 / MPU6050 IMU, MAX30102 (PPG), GSR, Empatica EmbracePlus
- Data Science & ML:** HRV and GSR analysis, Random Forest, LOSO cross-validation, deep learning, statistical analysis, scikit-learn, pandas, NumPy, Matplotlib
- Programming:** Python, C++, Java, JavaScript, SQL, HTML & CSS
- Research Methods:** Mixed methods, user studies, workshops and co-design, PSS / PHQ-9 instruments
- Tools:** Git, Linux, LaTeX, Google Earth Engine, MySQL

ACHIEVEMENTS

- 1st place, Database Project Presentation Competition (ESRD Lab, BUET & NSU ACM), 2023

REFERENCES

Available upon request.