

Md Nazmus Sahadat

85 5th street NW, Atlanta, GA 30308

☎ 901-335-6192 | ✉ m.n.sahadat@gmail.com | 🏠 www.msahadat.com | 📱 nazmus-sahadat

Education

Georgia Institute of Technology, Atlanta, Georgia

GPA: 3.81/4.00

PHD CANDIDATE IN ELECTRICAL AND COMPUTER ENGINEERING

Aug. 2014 - PRESENT

University of Memphis, Memphis, Tennessee

GPA: 4.00/4.00

MS IN ELECTRICAL AND COMPUTER ENGINEERING

Aug. 2012 - May 2014

Bangladesh University of Engineering and Technology, Dhaka, Bangladesh

GPA: 3.61/4.00

BSC IN ELECTRICAL AND ELECTRONIC ENGINEERING

Dec. 2004 - Oct. 2009

Skills

Circuitry: Embedded system design, Filter Design, Sensor Design.

Signal Processing: Digital filter design, Machine Learning (SVM, LR, KNN), Statistical data analysis.

Instrumentation: Oscilloscope, Signal Generator, Power Supply, Multi-meter, Soldering (Soldering iron, Air flow soldering), Impedance Analyzer, Microscope, FPGA, Micro-controller Development Board (Arduino MEGA, CY8CKIT-001, PSoC 3 & 5, Beagle Bone Black, Raspberry PI, 3D Printer (Prusa i3, Monoprice Maker Select V2).

Software: Cadence (Virtuoso, Allegro PCB editor), Orcad (Spice, Capture and Layout), Eagle, Altium, KiCAD, MATLAB, Simulink, COMSOL, SolidWorks, LT spice, Sigma Plot, LabVIEW.

Programming: IAR systems, TI Code Composer Studio, Atmel Studio, PSoc Programming, C, C++, Verilog, BLE device programming (CC254x), Eclipse.

Bio-Engineering: Microfluidic device design & Modeling, Smart drug delivery system, ECG, EEG, CNT sensor design.

Experiences

GT-Bionics Lab, Georgia Institute of Technology

Atlanta, Georgia

GRADUATE RESEARCH ASSISTANT (PHD CANDIDATE)

June. 2014 - Present

- Pursuing a PhD with a focus on multimodal Tongue drive system (mTDS). mTDS is an assistive technology, which controls a wheelchair, PC and smartphone using speech, tongue and head motion.
- Involved in electronic system design, PCB design, embedded firmware development, signal processing, machine learning, GUI development, user data collection and statistical analysis.

Think Tank Team, Samsung Research America

Mountain View, California

EE INTERN

May 2015 - Jul. 2015

- Involved in PCB design for high-speed communication of Samsung 360 camera, OLED display interface, flexible PCB design. Also, involved with other confidential projects.

ESARP Lab, University of Memphis

Memphis, Tennessee

GRADUATE RESEARCH ASSISTANT

Aug. 2012 - May. 2014

- Pursued MS with a thesis on smart drug delivery system using a chitosan-based carrier. Finite element modeling of the drug delivery system was done using COMSOL Multiphysics. In vitro experiments were done to verify the modeling accuracy. Experimental results were statistically verified
- Involved in modeling and designing a microfluidic device design for cancer cell separation.
- Involved in design of custom built EEG and ECG monitoring device (NeuroMonitor).
- Developed an algorithm for the bio-metric identification from one lead ECG signal.
- Designed, modeled a new vertically aligned CNT based dry Bio-sensor to capture ECG and EEG signal.

- Worked as a lecturer in the Department of Electrical & Electronic Engineering.
- Involved mostly in several laboratory developments (Electrical Circuit Lab, Electronics Lab, Electrical Electronics circuit simulation lab, Machine Lab), Teaching (Electrical Circuits, Analog & Digital Electronic Circuits, Electrical Machines).
- Was a mentor of several student projects (Wireless controlled robotic car development, Home automation system).

International Islamic University Chittagong

Dhaka, Bangladesh

LECTURER

Nov. 2009 - Feb. 2011

- Involved mostly in teaching (Control system, Electronic circuit simulation, Power systems, Power plant engineering and Microprocessor system design) and Student research projects (Design and implementation of a sinusoidal interrupted power supply, Galvanic skin response design).

Publications & Patent

- [1] M. Sahadat, S. Dighe, F. Islam, and M. Ghovanloo, "An independent tongue-operated assistive system for both access and mobility," *IEEE Sensors Journal*, vol. 18, no. 22, pp. 9401–9409, 2018.
- [2] M. Sahadat, N. Sebkhi, F. Kong, and M. Ghovanloo, "Standalone assistive system to employ multiple remaining abilities in people with tetraplegia," in *Biomedical Circuits and Systems Conference (BioCAS), 2018 IEEE*, pp. 1–4, IEEE, 2018.
- [3] F. Kong, M. Sahadat, and M. Ghovanloo, "Development and preliminary assessment of an arch-shaped stand-alone intraoral tongue drive system for people with tetraplegia," in *Biomedical Circuits and Systems Conference (BioCAS), 2018 IEEE*, pp. 1–4, IEEE, 2018.
- [4] N. Sahadat, N. Sebkhi, and M. Ghovanloo, "Simultaneous multimodal access to wheelchair and computer for people with tetraplegia," in *Proceedings of the 2018 on International Conference on Multimodal Interaction*, pp. 393–399, ACM, 2018.
- [5] M. Sahadat, A. Alreja, N. Mikail, and M. Ghovanloo, "Comparing the use of single vs. multiple combined abilities in conducting complex computer tasks hands-free," *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 26, no. 9, pp. 1868–1877, 2018.
- [6] M. Sahadat, A. Alreja, and M. Ghovanloo, "Simultaneous multimodal pc access for people with disabilities by integrating head tracking, speech recognition, and tongue motion," *IEEE transactions on biomedical circuits and systems*, vol. 12, no. 1, pp. 192–201, 2018.
- [7] M. Sahadat and M. Ghovanloo, "Efficacy assessment of multimodal tongue drive system (mtds) in comparison to keyboard and mouse (knm)," *Archives of Physical Medicine and Rehabilitation*, vol. 98, no. 12, pp. e163–e164, 2017.
- [8] M. Ghovanloo, M. Sahadat, Z. Zhang, F. Kong, and N. Sebkhi, "Tapping into tongue motion to substitute or augment upper limbs," in *Micro-and Nanotechnology Sensors, Systems, and Applications IX*, vol. 10194, p. 1019413, International Society for Optics and Photonics, 2017.
- [9] B. I. Morshed, M. Sahadat, and S. Consul-pacareu, "Patterned carbon nanotube electrode," Dec. 24 2015. US Patent App. 14/725,885.
- [10] A. Jafari, N. Buswell, A. Page, T. Mohsenin, M. Sahadat, and M. Ghovanloo, "Live demonstration: Towards an ultra low power on-board processor for tongue drive system," in *Biomedical Circuits and Systems Conference (BioCAS), 2015 IEEE*, pp. 1–1, IEEE, 2015.
- [11] Z. Zhang, S. Ostadabbas, M. Sahadat, N. Sebkhi, D. Wu, A. Butler, and M. Ghovanloo, "Enhancements of a tongue-operated robotic rehabilitation system," in *Biomedical Circuits and Systems Conference (BioCAS), 2015 IEEE*, pp. 1–4, IEEE, 2015.
- [12] M. Sahadat, Z. Zhang, A. Alreja, P. Srikrishnan, S. Ostadabbas, N. Sebkhi, and M. Ghovanloo, "Live demonstration: A tongue-operated multimodal human computer interface and robotic

rehabilitation system,” in *Biomedical Circuits and Systems Conference (BioCAS), 2015 IEEE*, pp. 1–1, IEEE, 2015.

- [13] M. Sahadat, A. Alreja, P. Srikrishnan, and M. Ghovanloo, “A multimodal human computer interface combining head movement, speech and tongue motion for people with severe disabilities,” in *Biomedical Circuits and Systems Conference (BioCAS), 2015 IEEE*, pp. 1–4, IEEE, 2015.
- [14] S. Consul-Pacareu, R. Mahajan, M. Sahadat, and B. I. Morshed, “Wearable ambulatory 2-channel eeg neuromonitor platform for real-life engagement monitoring based on brain activities at the prefrontal cortex,” in *4th IAJC/ISAM Joint Intl. Conf., FL*, p. 78, 2014.
- [15] M. Sahadat, E. L. Jacobs, and B. I. Morshed, “Hardware-efficient robust biometric identification from 0.58 second template and 12 features of limb (lead i) eeg signal using logistic regression classifier,” in *Engineering in Medicine and Biology Society (EMBC), 2014 36th Annual International Conference of the IEEE*, pp. 1440–1443, IEEE, 2014.
- [16] M. Sahadat, A. P. Hoban, B. I. Morshed, and W. O. Haggard, “Investigation of electrical stimulus on chitosan film based dds,” in *Engineering in Medicine and Biology Society (EMBC), 2014 36th Annual International Conference of the IEEE*, pp. 1424–1427, IEEE, 2014.
- [17] A. Mohapatra, M. Sahadat, B. I. Morshed, G. McGraw, A. P. Hoban, J. A. Jennings, W. O. Haggard, J. D. Bumgardner, and S. R. Mishra, “Stimuli-controlled drug delivery system development with implantable biocompatible chitosan microbeads,” in *IAJC-ISAM International Conference*, 2014.
- [18] M. Sahadat, S. Consul-Pacareu, and B. I. Morshed, “Wireless ambulatory eeg signal capture for hrv and cognitive load study using the neuromonitor platform,” in *Neural Engineering (NER), 2013 6th International IEEE/EMBS Conference on*, pp. 497–500, IEEE, 2013.
- [19] R. Mahajan, S. Consul-Pacareu, M. Abusaud, M. Sahadat, and B. I. Morshed, “Ambulatory eeg neuromonitor platform for engagement studies of children with development delays,” in *Smart Biomedical and Physiological Sensor Technology X*, vol. 8719, p. 87190L, International Society for Optics and Photonics, 2013.
- [20] M. Sahadat, S. Hossain, A. Rahman, and S. T. Atique, “Power quality improvement of large power system using a conventional method,” *Engineering*, vol. 3, no. 08, p. 823, 2011.
- [21] M. Sahadat, S. Deeba, S. Ahmad, G. Biswas, A. Elahi, N. Zakaria, *et al.*, “Reliability evaluation of bangladesh power system using cumulant method,” in *Electronics Computer Technology (ICECT), 2011 3rd International Conference On*, vol. 2, pp. 127–131, IEEE, 2011.
- [22] M. Sahadat, N. Al Masood, M. S. Hossain, G. Rashid, and A. H. Chowdhury, “Real power transfer capability enhancement of transmission lines using svc,” in *Power and Energy Engineering Conference (APPEEC), 2011 Asia-Pacific*, pp. 1–4, IEEE, 2011.

Honors & Awards

2018	BRCRC , Brooks Rehabilitation Collaborative Research Grant: \$100k	Jacksonville, FL
2018	ACM , ICMI Student Travel Support	Boulder, CO
2018	Gatech , BSAGT MC2 Rising Scientist Award	Atlanta, GA
2017	American Congress of Rehabilitation Medicine Conference , Best Poster Award (3rd place)	Atlanta, GA
2016	Gatech , BSAGT MC2 Rising Scientist Award	Atlanta, GA
2014	Gatech , Graduate Research Assistant	Atlanta, GA
2014	IEEE , EMBC Travel Award	Chicago, IL
2012	UofM , Graduate Research Assistant	Memphis, TN
2005	BUET , Undergraduate Merit Scholarship	Dhaka, Bangladesh
2004	Education Board , Higher Secondary School Board Scholarship	Raj., Bangladesh

Presentations

- ACM International Conference on Multimodal Interaction (ICMI 2018)** Boulder, CO
 POSTER PRESENTATION Oct. 2018
 • Simultaneous Multimodal Access to Wheelchair and Computer for People with Tetraplegia
- IEEE/CAS-EMB Biomedical Circuits and Systems Conference (BioCAS 2018)** Cleveland, OH
 POSTER PRESENTATION Oct. 2018
 • Standalone Assistive System to Employ Multiple Remaining Abilities in People with Tetraplegia
- American Congress of Rehabilitation Medicine Conference (ACRM 2017)** Atlanta, GA
 POSTER PRESENTATION Oct. 2017
 • Efficacy Assessment of multimodal Tongue Drive System (mTDS) in Comparison to Keyboard and Mouse (KnM)
- IEEE/CAS-EMB Biomedical Circuits and Systems Conference (BioCAS 2015)** Atlanta, GA
 ORAL PRESENTATION Oct. 2015
 • A multimodal human computer interface combining head movement, speech and tongue motion for people with severe disabilities
- IEEE/CAS-EMB Biomedical Circuits and Systems Conference (BioCAS 2015)** Atlanta, GA
 LIVE DEMO Oct. 2015
 • A tongue-operated multimodal human computer interface and robotic rehabilitation system
- IEEE Engineering in Medicine and Biology Society Conference (EMBC 2014)** Chicago, IL
 ORAL PRESENTATION Aug. 2014
 • Hardware-efficient robust biometric identification from 0.58 second template and 12 features of limb (Lead I) ECG signal using logistic regression classifier
- IEEE Engineering in Medicine and Biology Society Conference (EMBC 2014)** Chicago, IL
 POSTER PRESENTATION Aug. 2014
 • Investigation of electrical stimulus on chitosan film based DDS
- IEEE/EMBS Conference on Neural Engineering (NER 2013)** San Diego, CA
 POSTER PRESENTATION Nov. 2013
 • Wireless ambulatory ECG signal capture for HRV and cognitive load study using the NeuroMonitor platform

Activities

- ACM International Conference on Multimodal Interaction (ICMI)** Boulder, CO
 VOLUNTEER 2018
 • Arranging poster and oral presentation session of the conference
- Bangladesh Student Association at Georgia Tech (BSA-GT)** Atlanta, GA
 SECRETARY Jan. 2017 - May 2018
 • Involved in arranging different cultural and sports activities of the association
- IEEE Transactions on Biomedical Circuits and Systems (TBioCAS)** Atlanta, GA
 REVIEWER Aug. 2014 - PRESENT
 • Reviewing scientific article and give feedback to help people contribute to scientific community
- IEEE Journal of Biomedical and Health Informatics (JBHI)** Atlanta, GA
 REVIEWER Aug. 2014 - PRESENT
 • Reviewing scientific article and give feedback to help people contribute to scientific community
- IEEE Transactions on Biomedical Engineering (TBME)** Atlanta, GA
 REVIEWER Aug. 2014 - PRESENT
 • Reviewing scientific article and give feedback to help people contribute to scientific community
- IEEE** Atlanta, GA
 GRADUATE STUDENT MEMBER Mar. 2013 - Present
- IEEE Engineering in Medicine and Biology Society (EMBS)** Atlanta, GA
 GRADUATE STUDENT MEMBER Mar. 2013 - Present
- American Congress of Rehabilitation Medicine (ACRM)** Atlanta, GA
 STUDENT MEMBER Oct. 2017 - Present

Georgia Tech Student Alumni Association (SAA)

MEMBER

Atlanta, GA

Aug. 2016 - Present

Fulton County Schools

JUDGE AT SCIENCE FAIR

Atlanta, GA

2015-Present

- reviewing different science projects, comment and score the quality of the projects

IEEE Engineering in Medicine and Biology Conference

VOLUNTEER

Chicago, IL

2014

- Arranging poster and oral presentation session of the conference

Media & News

09/01/2018 <https://mobilitymgmt.com/Articles/2018/09/01/Tongue-Drive-System.aspx?Page=1>

11/01/2017 <https://www.ece.gatech.edu/news/598197/gt-bionics-lab-selected-acrm-conference-honors>

08/01/2017 <http://blog.snapeda.com/2017/08/01/engineer-spotlight-nazmus-sahadat-from-georgia-institute-of-technology>