Tasnia Ashrafi Heya

Google Scholar Profile

LinkedIn Profile

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Education

- PhD in Computer Science, Texas Tech University. CGPA: **3.95/4.00** (Fall 2019 –Summer 2024)
- B.Sc. in Computer Science and Engineering, BRAC University, December 2016. CGPA: **3.77/4.00** (High Distinction/First)

Research Interests

- Cyber Security, Homomorphic encryption
- Machine Learning, Reinforcement Learning, Federated Learning
- Data Science
- Human-Computer Interaction
- Internet of Things (IoT)

Teaching Experiences

- **Teaching Assistant: Advance Operating System** (Fall 2023 and Spring 2024), Texas Tech University (TTU)
- **Guest lecturer**: **Advance Operating System** (Fall 2023 and Spring 2024), TTU
- **Guest lecturer**: **Data Structure** (Fall 2023), TTU
- **Guest lecturer**: **Mobile Data Management and Privacy**, TTU. Topic: Privacy-area aware dummy-based location privacy in mobile services (Spring 2023)
- **Graduate Teaching assistant: Computer Architecture** (2018), BRAC University
- **Student Tutor**, Department of Computer Science and Engineering, BRAC University (September 2015 -December2016) [Tutored for 3 undergraduate courses: **Programming 1 (Java), Data structure and Algorithm**]

Professional Experiences

- Graduate Teaching Assistant (August 2023 – August 2024), Texas Tech University
- Graduate Fellow Student (August 2019 – August 2023), Texas Tech University
- Graduate Research Assistant (September 2017 – August 2018), School of Computer Science and Engineering, BRAC University. **Supervisor: Dr. Amitabha Chakrabarty** [*Wrote a research proposal and the grand was accepted.*]
- Director and Developer at BulbInc. Ltd., start-up company (April 2017 – September 2017)
- System Engineer, Jadoo Digital (January 2017 – March 2017)

Publications

Book Chapter:

- A. Chakrabarty, **T. A. Heya**, S. E. Arefin, M. A. Hossain, K. D. J. Das, ***"A Novel Extended-Cloud Based Approach for Internet of Things"***, In: Mishra B., Das H., Dehuri S., Jagadev

A. (eds) Cloud Computing for Optimization: Foundations, Applications, and Challenges. Studies in Big Data, vol. 39. Springer, Cham, doi: 10.1007/978-3-319-73676-1_12

- **T. A. Heya**, S. E. Arefin, M. A. Hossain, K. D. J. Das, A. Chakrabarty, ***"IoT Infrastructure: Fog Computing Surpasses Cloud Computing"***. In: Hu YC., Tiwari S., Mishra K., Trivedi M. (eds) Intelligent Communication and Computational Technologies. Lecture Notes in Networks and Systems, vol. 19. Springer, Singapore. doi: 10.1007/978-981-10-5523-2_5

Conference Papers:

- **T. A. Heya**, A. Serwadda, *"**Exploiting Voice-controlled Devices to Infer the Layouts of Private Spaces**", 16th International Conference on Human System Interaction (HSI 2024)*
- **T. A. Heya**, A. Serwadda, *"**Secure Audio Classification for Voice Assistants: A Multi-Party Homomorphic Approach**", 16th International Conference on Human System Interaction (HSI 2024)*
- **T. A. Heya**[*], Y. Ineza[*], A. Serwadda, S. E. Arefin, ***"Stable or Shaky? The Semantics of ChatGPT's Behavior Under Repeated Queries"***, accepted in 18th IEEE International Conference on Semantic Computing (ICSC 2024).
- S. E. Arefin, **T. A. Heya**, H. Al-Qudah, Y. Ineza and A. Serwadda, *"**Unmasking the giant: A comprehensive evaluation of ChatGPT's proficiency in coding algorithms and data structures**"*, accepted in the 16th International Conference on Agents and Artificial Intelligence 2024, pre-print available in arxiv. doi: 10.48550/arXiv.2307.05360
- G. Casaquero, S. E. Arefin, **T. H. Ashrafi**, H. Wassawa and A. Serwadda, ***"Weaponizing IoT Sensors: When Table Choice Poses a Security Vulnerability"***, IEEE TPS: 4th IEEE International Conference on Trust, Privacy, and Security, 2022.doi:10.1109/TPSISA56441.2022.00029
- **T. A. Heya**, A. Serwadda, I. Griswold-Steiner, R. Matovu, ***"A Wearables-Driven Attack on Examination Proctoring"***, 18th International Conference on Privacy, Security and Trust (PST), 2021. doi:10.1109/PST52912.2021.9647760 [**Presenter**]
- **T. A. Heya**, S. E. Arefin, M. Alam and A. Chakrabarty, ***"Image Processing Based Indoor Localization System for Assisting Visually Impaired People"***, Ubiquitous Positioning, Indoor Navigation and Location-Based Services (UPINLBS), 2018. doi:10.1109/UPINLBS.2018.8559936 [**Presenter**]
- S. E. Arefin, **T. A. Heya**, and J. Uddin, ***"Real-life Implementation of Internet of Robotic Things Using 5 DoF Heterogeneous Robotic Arm",*** 7th International Conference on Informatics, Electronics and Vision and International Conference on Imaging, Vision and Pattern Recognition, Japan, 2018. doi: 10.1109/ICIEV.2018.8641019
- **T. A. Heya**, S. E. Arefin, M. A. Hossain, A. Chakrabarty, ***"Comparative analysis of computation models for IoT: Distributed fog vs. conventional cloud"***, 4th International Conference on Advances in Electrical Engineering (ICAEE), 2017. doi:10.1109/ICAEE.2017.8255456
- **T. A. Heya**, S. E. Arefin, M. A. Hossain, K. D. J. Das, A. Chakrabarty, ***"Service Based FOG Computing Model for IoT"***, IEEE International Conference on Collaboration and Internet Computing (CIC), San Jose, CA, 2017, pp. 163-172. doi: 10.1109/CIC.2017.00031
- **T. A. Heya**, S. E. Arefin, M. A. Hossain, K. D. J. Das, A. Chakrabarty, ***"Fog Based Distributed IoT Infrastructure"***, Second International Conference on Internet of things and Cloud Computing (ICC), 2017, Cambridge, UK. doi: http://10.1145/3018896.3036365 [**Presenter**]

Working publications:

1. ***"Using Audio Generation Techniques to Mislead Intruders from Performing User Profiling Attacks"***
   T. A. Heya, A. Serwadda
2. ***"Biometric authentication using brain EEG waveforms from consumer grade products"***
   T. A. Heya, S. E. Arefin
   Short description: We show that authentication using brainwave signal is possible to conduct with consumer grade devices by capturing brain EEG signals which can be less expensive and easier to handle.

Academic Honors

- **Whitacre Graduate Recruitment Fellowship** at TTU (Fall 2019-Summer 2023)
- **Dean's list award**, BRAC University for four times out of twelve semesters (Summer 2013, 2014, 2016 and Spring 2015)
- **VC's list award** for two times (Fall 2015 and Spring 2016)
- Merit based scholarship (Summer 2016 and Fall 2016)

Skills

- Programming skills: Python, Java, C, and Assembly language
- Data science: pandas, keras, tensorflow, pytorch, and scikit-learn, matplotlib, seaborn, matlab
- Worked with Microsoft Azure, Google Cloud Services, Github, Gitlab, Linux
- Development skills: Android, Web (HTML, CSS, JavaScript, PHP, MySQL, SQLite)
- Hardware skills: Basic knowledge of Arduino and Raspberry pi
- Leadership, organization, communication skills and a good team player

Professional Certification Training

- Coursera: **Data Science by IBM, Foundations of Cybersecurity by Google, and Introduction to Cybersecurity Tools & Cyber Attacks by IBM.** September, 2023
- ACCESS HPC Workshop - **Machine Learning and BIG Data**. May, 2023
- Top-up IT Training: Mobile Application Development (Android) under NASSCOM IT-ITES Sector Skill Council certification, certified by George Washington University,. August 2016

Paper Review Experience

- Reviewed two papers for ACM IMWUT 2020
- Reviewing a paper for Computers & Security (Science Direct journal -Elsevier)

Affiliation

- Senior Microsoft Student Partner (July 2015 – December 2016)
- Member of Women Tech-makers Bangladesh (2014-2016)
- Member of Google Developers (GDG) Group Bangladesh (2013-2015)

Professional Graduate Workshops

Writing Grant and Fellowship Proposals, Writing Style: Connecting Ideas, Maintaining Productive Writing Practices, Identifying Grants for Research and Project Funding workshop

Achievement

Winner of National Hackathon 2014, Bangladesh

Extracurricular Activities

Assistant Director of BRAC University Computer Club (BUCC), Executive of BRAC University Adventure Club, Senior-executive of High School Debating and Science Club

Community Service Experiences

- Part of multiple projects organized by "Community Action"; a student run registered social service organization in Bangladesh. We provided foods, gifts and arranged activities for to street children.
- I started an unofficial group named "Onkur" to provide foods and winter clothes to poor people in along with some classmates.
- One of the executive members of "Ree Foundation" (student run non-profit organization) to spread awareness about SDG goals among youngsters.

References

1. **Dr. Abdul Serwadda**
   Associate Professor
   Computer Science,
   Texas Tech University
   Email: abdul.serwadda@ttu.edu
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2. **Dr. Tommy Dang**
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   Computer Science,
   Texas Tech University
   Email: tommy.dang@ttu.edu
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3. **Dr. Amitabha Chakrabarty**
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   Computer Science and Engineering,
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4. **Dr. Jing Jing Yao**
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5. **Dr. Jia Uddin**
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