Curriculum Vitae of

Md. Amjad Hossain, Ph.D
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Google Scholar: https://scholar.google.com/citations?user=8FFLrw4AAAAJ&hl=en

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RESEARCH INTERESTS

Data Science, Multimedia Computing and Networking, Distributed Systems, Evolutionary Computing.

EDUCATION

Ph.D. in Computer Science, Kent State University, USA, December 2020
Dissertation Topic: Design of Crowd-Scale Multi-Party Telepresence System with Distributed Multipoint Control Unit Based on Peer To Peer Network

Bachelor of Science in Computer Science & Engineering (CSE), March 2008.
Khulna University of Engineering and Technology (KUET)
Overall Rank: Second out of 49 students
Thesis: Quantum Evolutionary Algorithm Based on Particle Swarm Theory

PROFESSIONAL APPOINTMENTS

Tenure Track Assistant Professor of Computer Science **August 2021 - Present**
Emporia State University

Tenure Track Assistant Professor of Computer Science August 2020 - July 15th, 2021
Shepherd University, WV, USA

Part-Time Faculty
Department of Computer Science,
Kent State University (KSU), Main Campus, June 2019-May,2020
Kent State University, Stark Campus August 2019- December 2019

Graduate Teaching Assistant (GTA) August 2016- May 2019
Department of Computer Science, KSU, Main Campus, Kent, OH

Research Assistant (RA) August 2012 - July 2016
Department of Computer Science, KSU, Main Campus, Kent, OH

Assistant Professor (Full-time) January 2012 to August 2012
Lecturer (Full-time) October 2008 to December 2011
Department of Computer Science and Engineering (CSE)
Khulna University of Engineering & Technology (KUET)
Khulna – 9203, Bangladesh.

CURRENT RESEARCH PROJECTS

- *Prediction on default loans in Peer-to-Peer lending using machine learning techniques*: This **research project** involves two undergraduate students. We analyze datasets from P2P lending platforms to predict default loans using classification algorithms.

- *Classification and Sentiment Analysis of Highway Work-zone Tweets using Machine Learning and Natural Language Processing.* This is a collaborative research project involving researchers from different universities in the USA.
- *Bandwidth Estimation for Future Bigdata Collaboration Network:* We are analyzing the research collaboration data of the authors of project proposals and papers to estimate the bandwidth requirements of future big data collaboration networks.
- *Distributed Multipoint Control Unit (MCU):* The goal is to support Large-scale Video conferencing based on P2P networks without using expensive statically placed servers provided by different service providers.
- *Beyond Herd Immunity*: Post-pandemic analysis of COVID-19 using Mathematical Modeling and Machine learning for developing a general pandemic prediction model for Future COVID-like Infectious Diseases.
- Emotional and Sentimental Analysis of the Russian-Ukraine War from Twitter's Perspective using NLP methods. In this project, we also analyze people's perspectives on cyber warfare using Reddit posts.

GRANTS

1. Machine learning model for COVID-19 trend prediction considering top factors of the pandemic. Research Enhancement Award by Shepherd University and West Virginia Space Grant Consortium, Spring 2021. [$5000]

2. A study on predictive models for estimating the probability of default loans in Peer-to-Peer lending. *ESU Summer Undergraduate Research Program, Summer 2022. [$6500]*

3. Emotional and Sentimental Analysis of the Russian-Ukraine War from Twitter's Perspective using NLP methods December 2022. [$1304]

4. Public perception of Cyber Warfare: An analysis using social media data. *ESU Summer Undergraduate Research Program, Summer 2023. [$6500]*

PREVIOUS PROJECT INVOLVEMENT AND WRITING

As a **Research Assistant** at Kent State University (Fall-12 to Summer16) I,

- Worked for Bangladesh Research and Education Network (BdREN) project.
  - Study and present the tools for network measurement and analysis, such as PingER, Cacti, PerfSONAR, etc.
  - Report comparative analysis of available Hardware and Software for cloud service implementation in BdREN.
- Wrote project proposals on,
  - Online Course Collaboration System for universities in Bangladesh and Kent State University.
  - A model for availing Data on Natural Disasters in Bangladesh to Researchers around the globe.

PUBLICATIONS

Journals: (Google Scholar)

1. Sayed, Md Abu and **Hossain, Md. Amjad** and Rahman, Md Mokhlesur and Ali, G. G. Nawaz and Islam, Mohammad Anwarul and Paul, Kamal Chandra and Qin, Xiao, Machine Learning Based Public Sentiment Analytics on Roadway Work-Zone Tweets. Available at SSRN: https://ssrn.com/abstract=4334677 (Also u*nder review at IEEE Transactions on Computational Social Systems*).
2. Md. Shahinoor Rahman, Kamal Chandra Paul, Md. Mokhlesur Rahman, Jim Samuel, Jean-Claude Thill ,9, **Md. Amjad Hossain**, and G. G. Md. Nawaz Ali, "Pandemic Vulnerability Index of US Cities: A Hybrid Knowledge-based and Data-driven Approach", *Sustainable Cities and Society*, Elsevier, Volume 95, 104570, 2023.

3. Ali, G.G.M.N.; Rahman, M.M.; **Hossain, M.A**.; Rahman, M.S.; Paul, K.C.; Thill, J.-C.; Samuel, J. Public Perceptions of COVID-19 Vaccines: Policy Implications from US Spatiotemporal Sentiment Analytics. Healthcare 2021, 9, 1110. https://doi.org/10.3390/healthcare9091110

4. M. M. Rahman, K. C. Paul**, M. A. Hossain**, G. G. M. N. Ali, M. S. Rahman and J. -C. Thill, "Machine Learning on the COVID-19 Pandemic, Human Mobility and Air Quality: A Review," in IEEE Access, vol. 9, pp. 72420-72450, 2021, doi: 10.1109/ACCESS.2021.3079121.

5. **Hossain, Md Amjad**; Khan, Preoyati; Lu, Cheng Chang; Clements, Robert J.: 'Distributed ImageJ(Fiji): a framework for parallel image processing', IET Image Processing, 2020, 14, (12), p. 2937-2947, DOI: 10.1049/iet-ipr.2019.0150

6. Kawser Wazed Nafi, Tonny Shekha Kar, **Md. Amjad Hossain**, M. M. A. Hashem. "E-Commerce Model based on Fuzzy Based Certain Trust Model". *Global Journal of Computer Science and Technology*, ISSN 0975-4172, Jan. 2014.

7. Kawser Wazed Nafi, Tonny Shekha Kar, **Md. Amjad Hossain**, and M.M.A Hashem. "An Advanced Certain Trust Model Using Fuzzy Logic and Probabilistic Logic theory", International Journal of Advanced Computer Science and Applications IJACSA, Vol 3 No 12, 2012.

8. Pintu Chandra Shill, **Md. Amjad Hossain**, Md. Kowsar Hossain, Md. Faijul Amin, and Kazuyuki. Murase, "Design and Implementation of an Effective Fuzzy Logic Controller based on Quantum Inspired Evolutionary Algorithm", *Journal of Computers*, Academy Publisher, Vol 7, No 3, pp. 586-596, Mar 2012.

9. **Md. Amjad Hossain**, Pintu Chandra Shill, Bishnu Sarkar, and Kazuyuki Murase. "Optimal Fuzzy Model Construction with Statistical Information using Genetic Algorithm", *International Journal of Computer Science and Information Technology (IJCSIT)*, ISSN:0975-3826 (online);0975-4660(print), Vol. 3, No. 6, pp. 241-256, December 2011.

10. **Md. Amjad Hossain**, Md. Kowsar Hossain, M.M.A Hashem, "A Generalized Hybrid Real-Coded Quantum Evolutionary Algorithm Based on particle swarm theory with Arithmetic Crossover", *International Journal of Computer Science and Information Technology (IJCSIT)*, ISSN:0975-3826 (online);0975-4660(print), Vol. 2, No. 4, pp.172-187, August 2010.

Conferences:

1. **Md Amjad Hossain** and Javed I. Khan, "ZePoP: A Distributed Leader Election Protocol using the Delay-based Closeness Centrality for Peer-to-Peer Applications, IEEE International Conference on Cloud Networking, Nov 1- 3, NJ, 2023[in press].

2. **Md. Amjad Hossain** and Javed I. Khan, "Distributed dynamic MCU for video conferencing in Peer-to-Peer network", 35th IEEE International Performance Computing and Communications Conference, pp. 1-8, Dec. 9-11, 2016, Las Vegas, NV.

3. Mehdi Ghayoumi, Javed I. Khan, M Pourebadi Khotbesara, Evan Bauer, **Amjad Hossain**, "Follower Robot with an Optimized Gesture Recognition System", Socially & Physically Assistive Robotics for Humanity workshop at Robotics Science and Systems (RSS), June 2016.

4. **Md. Amjad Hossain** and Javed I. Khan. "Dynamic MCU Placement for Video Conferencing on Peer-to-Peer Swarm", IEEE International Symposium on Multimedia, pp. 144-147, Dec 14-16, 2015, Miami, FL.

5. Kawser Wazed Nafi, Tonny Shekha Kar, **Md. Amjad Hossain** and M. M. A. Hashem, "A fuzzy logic-based certain trust model for E-commerce," *2013 International Conference on Informatics, Electronics and Vision (ICIEV)*, Dhaka, 2013.

6. Kawser Wazed Nafi, Tonny Shekha Kar, **Md. Amjad Hossain** and M. M. A. Hashem, "A new trusted and secured E-commerce architecture for cloud computing," *2013 International Conference on Informatics, Electronics and Vision (ICIEV)*, Dhaka, 2013, pp. 1-6. DOI: 10.1109/ICIEV.2013.6572690

7. Kawser Wazed Nafi, Tonny Shekha Kar, **Md. Amjad Hossain**, and M.M.A Hashem. "A fuzzy and probabilistic logic-based representational model of Certain Trust model", *International Conference on Informatics, Electronics & Vision (ICIEV)*, May 18-19, 2012, Dhaka, Bangladesh.

8. Pintu Shill, **Md. Amjad Hossain**, Faijul Amin and Kazuyuki Murase, "An Adaptive Fuzzy Logic Controller based on Quantum-Inspired Evolutionary Algorithm", *2011 IEEE International Conference on Fuzzy Systems*, E-ISBN: 978-1-4244-7316-8 , Print ISBN: 978-1-4244-7315-1, pp. 614 – 621, June 27-30, 2011, Grand Hyatt, Taipei, Taiwan.

9. **Md. Amjad Hossain**, Pintu Chandra Shill, Md. Kowsar Hossain and Kazuyuki Murase, "Designing an Effective Fuzzy Logic Controller based on Quantum Evolutionary Algorithm", *13th International Conference on Computer and Information Technology (ICCIT)*, ISBN: 978-1-4244-8496-6, pp. 51 – 56, December 23-25, 2010, Dhaka, Bangladesh.

10. Md. Kowsar Hossain, **Md. Amjad Hossain,** M.M.A Hashem and Md. Mohsin Ali, "Quantum Evolutionary Algorithm Based on Particle Swarm Theory for Multiobjective Problems", *13th International Conference on Computer and Information Technology (ICCIT)*, ISBN: 978-1-4244-8496-6, pp. 21-26, December 23-25, 2010, Dhaka, Bangladesh.

11. Md. Habibullah, **Md. Amjad Hossain**, Md. Abdur Rafiq, and B. C. Ghosh, **"**Quantum Evolutionary Algorithm Based Fast Speed Controlled Induction Motor Drive with CRTRL Flux Estimator", *International Conference on Electrical and Communication Engineering(ICECE),* pp. 478 – 481, December 18-20, 2010, Dhaka, Bangladesh.

12. Md. Amjad Hossain, Md. Kowsar Hossain, M.M.A Hashem, "Hybrid Real-Coded Quantum Evolutionary Algorithm Based on Particle Swarm Theory", *12th International Conference on Computer and Information Technology (ICCIT), pp. 13-18, December 21 – 23, 2009, Dhaka, Bangladesh.*

13. Md. Mohsin Ali**, Md. Amjad Hossain**, Md. Kowsar Hossain, G. M. Mashrur-E-Elahi, Md. Asadul Islam, "A New Hashing and Caching Approach for Reducing Call Delivery Cost and Location Server's Load in Wireless Mobile Networks", *12th International Conference on Computer and Information Technology (ICCIT), pp. 61-66, December 21 – 23, 2009, Dhaka, Bangladesh.*

Poster Presentation

Mitchell Regan, Seth Kern, and Md Amjad Hossain, *A study on predictive models for estimating the probability of default loan in Peer-to-Peer lending***,** Kansas Undergraduate Research Day, March 1st, 2023.

Papers in Preprint/preparation/Review

1. Mitchell Regan, Seth Kern and **Md Amjad Hossain**, A study on predictive models for estimating the probability of default loan in Peer-to-Peer lending. **(To be submitted soon**).
2. Sayed, Md Abu and **Hossain, Md. Amjad** and Rahman, Md Mokhlesur and Ali, G. G. Nawaz and Islam, Mohammad Anwarul and Paul, Kamal Chandra and Qin, Xiao, Machine Learning Based Public Sentiment Analytics on Roadway Work-Zone Tweets. *IEEE Transactions on Computational Social Systems.* (Under Review).
3. **Md Amjad Hossain** and Others (Author order is not decided yet). "Developing A Generic Hybrid Mathematical Model to Predict Herd Immunity for Infectious Diseases: Application to COVID-19 Pandemic". (In Preparation).
4. **Md Amjad Hossain** and Others (Author order is not decided yet). "Analysis and visualization of network utilization among the research organizations". (In Preparation).
5. **Md Amjad Hossain** and Javed I. Khan, "CrowdPack: An architecture for Large Scale P2P Telepresence System using Distributed MCU". (In Preparation)
6. Chase Oaks and **Md Amjad Hossain**, "Analysis of cyber warfare using Reddit posts in the context of Russia-Ukraine war".
7. Syed Maheen, Nasim Ferdous, and **Md Amjad Hossain** "Sentiment and emotional analysis on Ukraine- Russian war using Twitter data."

MENTORSHIP

Supervised the following student research projects:

1. Kawser Wazed Nafi and Tonny Shekha Kar, *Ensuring Trust and Security in Cloud Computing, 2011-2012, (***Published five papers**)
2. Adam P, *Analysis and visualization of network utilization among the research organizations,* 2021- present (one paper in preparation)
3. Mitchell Regan, Seth Kern, *A study on predictive models for estimating the probability of default loan in Peer-to-Peer lending*, June 2022 to present (, one poster accepted for presenting in **Kansas Undergraduate Research Day,** one paper in preparation).
4. Syed Mustavi Maheen, Emotional and Sentimental Analysis of the Russian-Ukraine War from Twitter's Perspective using NLP methods (Current Project).
5. Chase Oaks, Public perception of Cyber Warfare: An analysis using social media data (current Project).

TEACHING EXPERIENCE

I have more than eight ***years*** of teaching experience in Computer Science.

Teaching Courses:

KUET, Bangladesh: Object-Oriented Programming with C++, Design and Analysis of Algorithms, Data Structures and Algorithms, Compiler Design, Mathematical Analysis, Digital System Design, Advanced Computer Architecture.
Kent State University: Introduction to Database Systems Design, Algorithms and Programming-I (Lab instructor).
Shepherd University: Introduction to Computer Science, Artificial Intelligence, Windows Programming, Introduction to programming languages, Data and File Structures, Information Security, and Directed Research (Capstone).

Emporia State University: Advanced Computer Programming, System Programming, Data Structures and Algorithms, Programming and Problem Solving II, Principle of Computer Organization, CS Capstone, Database Organization.

TRAINING & CERTIFICATION

- **CompTIA Security + Certification (Code: 47VPSWGTCNB41TCR)**
- **Quality Matters (QM)** Certification for "Independent Designing Your Online Course (DYOC)".
- Participated in two GENI Engineering Conferences (GEC 18 and GEC19) where I learned to use and manage GENI resources and implement Software Defined Networks.
- **Completed CCNA (Cisco Certified Network Associate):** CCNA 1, CCNA 2, CCNA 3, CCNA 4.
- Participated in the "Joint ICTP-TWAS First ICTP Regional Microelectronics Course on VHDL for Hardware Synthesis and FPGA Design in South and Southeast Asia" held on 31 Jan to 18 Feb 2011.

ONLINE COURSES & CERTIFICATION

- Machine Learning by Andrew Ng, Stanford University (certificate)
- Machine Learning, Data Science and Deep Learning with Python, Udemy (In progress)
- MIT 6.S191 Introduction to Deep Learning (In progress)

SKILLS AND KNOWLEDGE

Programming Languages: C, C++, Java, Python, C#, R, MATLAB/Octave, Verilog, VHDL.
BigData Analysis: Hadoop, Hive, Pig, streaming, mrjob, and MapReduce programming with Python and Java.

Other Languages and tools: HTML, JavaScript, PHP, SQL, MPI, OpenGL, Flex, YACC, Latex, FPGA, ImageJ, Gstreamer, OpenCV.

SERVICE ACTIVITIES

- Fellow at Cybersecurity Center (CyROC), ESU, Fall 2022 to present.
- Member of student learning committee (SLC), ESU, fall 2023 to present.
- Member of Information Security Advisory Committee, ESU- Fall 2023 to present.
- Member of Learning Technology Advisory Committee, ESU – Fall 2023 to present.
- Member of the Department's Curriculum Committee (DCC), Emporia State University, 2021-present.
- The chair of the faculty search committee, Computer Science, 2022-23, Emporia State University. Successfully hired a CS faculty.
- Member of program review committee (CS, IS, BDA programs), Emporia State University, 2021 to present. **Revamped these programs to support market needs. CS program is changed to get ABET accreditation.**
- Member of the faculty team for the cyber security center at Emporia State University, 2022 to present.
- **Advisor**, Technology Club (previously IS club), ESU, fall 2022 to present.
- **Advisor**, Bangladesh Student Association, ESU, Spring 2022 to present.
- Member of a faculty search committee at Shepherd University, 2021

SCHOLARSHIPS & AWARDS

- University Merit Scholarship (duration: 2004 – 2007) from Khulna University of Engineering & Technology (KUET)
- Fellowship for Attending - Joint ICTP-TWAS First ICTP Regional Microelectronics Course on VHDL for Hardware Synthesis and FPGA Design in South and Southeast Asia, from 31st Jan to 18th Feb 2011.
- Bangladesh-Sweden Trust Fund Travel Award 2014.
- Research Assistantship from September 2012 to August 2016.
- Teaching Assistantship from September 2016 to Spring 2019.
- Travel Award (twice) – GENI Engineering Conference (GEC18 and GEC19)

MEMBERSHIP

- Member of IEEE, The Institute of Electrical and Electronics Engineers.

VOLUNTEER AND LEADERSHIP

- **Session Chair** IEEE CLOUDNET 2023, IEEE ISM 2015,
- The **reviewer** of Springer Nature, IEEE Access, JNCA -Elsevier, CSAE2018, ICCA 2020, EICT 2021.
- **Graduate Student Senator,** Department of Computer Science, KSU, 2017-18
- Initiator and co-founder of Bangladesh Student Association, Kent State University. 2017.
- Member of Local Management Committee in the 11th International Conference on Computer and Information Technology (ICCIT 2008), which was held in KUET, Khulna - 9203, Bangladesh, from 24 – 27 December 2008.
- The founding faculty of SGIPC, The Special Group of Interest in Programming Contest, KUET, Bangladesh.
- Organizing committee member of the KUET Programming Contest.
- Coach of programming contest group of KUET for several events in Bangladesh.

Regards
Md Amjad Hossain