Dr. Imtiaz Mahmud
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Curriculum Vitae

Ongoing Works

- Testing different TCP/MPTCP congestion control algorithms for vast implementation.
- Efficient delivery of sensor's data into 5G core using multiple communication interfaces.

Major Publications

- **Imtiaz Mahmud**, Tabassum Lubna, and You-Ze Cho, "Performance evaluation of MPTCP on simultaneous use of 5G and 4G networks", *Sensors*, Vol. 22, Issue. 19, pp. 7509, Oct. 2022.

- **Imtiaz Mahmud**, Tabassum Lubna, Geon-Hwan Kim, You-Ze Cho, "BA-MPCUBIC: bottleneck-aware multipath CUBIC for multipath-TCP", *Sensors*, Vol. 21, Issue. 18, pp. 6289, Sep. 2021.

- **Imtiaz Mahmud**, Tabassum Lubna, Yeong-Jun Song, and You-Ze Cho, "Coupled Multipath BBR (C-MPBBR): a efficient congestion control algorithm for multipath TCP", *IEEE Access*, Vol. 8, pp. 165497-165511, Sep. 2020.

- **Imtiaz Mahmud** and You-Ze Cho, "Adaptive hello interval in FANET routing protocols for Green UAVs"; *IEEE Access*, Vol. 7, pp. 63004-63015, 2019.

N.B. Full list of publications is available in Attachment #1 (list of publications)

Work Experience

Postdoctoral Scholar ***2012.10 – Current***

Data Science Division at Lawrence Berkeley National Laboratory (Berkeley Lab), Berkeley, CA.

- Analyzing the performance of existing TCP/MPTCP congestion control algorithms in high-speed, large-bandwidth networks.
- Develop a cutting-edge TCP/MPTCP congestion control algorithm that can allow reliable, time-bound, real-time data transport in 5G networks.
- Figuring out how to use 5G core networks to efficiently transfer massive amounts of data from on-ground sensors to cloud servers.

Postdoctoral Research Fellow ***2019.09 – 2022.09***

School of Electrical and Electronic Engineering, Kyungpook National University, Daegu, South Korea

- Investigating the problems inside current TCP congestion control algorithms for high-speed Internet.
- Analyzing the successful applicability of the existing TCP congestion control algorithms for multipath-TCP.
- Developing several multipath-TCP congestion control algorithms.
- Finding a proper solution for TCP/multipath-TCP congestion control algorithms to succeed in the 5G mmWave network.

Education

Ph.D.: Electronics Engineering ***2015.09 – 2019.08***

Kyungpook National University, Daegu, South Korea

- Graduated with a GPA of 3.92 out of 4.3 (95.2% marks).
- Thesis: “Detection avoidance of target tracking and routing scheme for UAV group”.
- Majored in Information and Communication Engineering.
- Received KNU International Graduate Scholarship.

Research experience during Ph.D.

- Developed and implemented ant-colony-optimization based mobility model for UAVs in reconnaissance applications.
- For the first time, proposed a novel and adaptive algorithm for determining the hello-message interval for the UAVs by taking advantage of the UAV's mission-related information.
- Developed a location estimation-based routing protocol for UAVs considering the sparsely populated scenario.

M.Sc.: Electronics Engineering ***2013.09 – 2015.08***

Kyungpook National University, Daegu, South Korea

- Graduated with a GPA of 3.83 out of 4.3 (94.3% marks).
- Thesis: “Effect of surface energy on formation of spin-coated ZnO seed layer and hydrothermally grown ZnO nanowires”.
- Received KEB Foundation Global Scholarship.
- Received Best Paper Award in ICECE-2014.

Research experience during M.Sc.

- Investigated the hydrothermal growth process of ZnO nanowires.
- Experimented the gas sensing properties of the grown ZnO nanowires.

B.Sc.: Telecommunication and Electronic Engineering ***2008.01 – 2011.12***

Hajee Mohammad Danesh Science and Technology University, Dinajpur, Bangladesh

- Graduated with a CGPA of 3.62 out of 4.0 (Sixth position in the class).
- Thesis: "Co-operative Solar Energy A Way to Enlighten the Tribal People of Bangladesh Cost Effectively and Hence Reduce Carbon Emission".
- Attended several ACM ICPC contests at the national level with outstanding performance.

Higher Secondary School Certificate (HSC) ***2007***

Cantonment Public School & College, BUSMS, Parbatipur, Dinajpur (Board: Rajshahi)

- GPA 5.0 out of 5.0 (Obtained GPA 5 in all subjects except Bengali)

Secondary School Certificate (SSC) ***2005***

Cantonment Public School & College, BUSMS, Parbatipur, Dinajpur (Board: Rajshahi)GPA 5.0 out of 5.0 (Obtained GPA 5 in all subjects)

Honorable Mentions

- Guest Editor: Electronics; SCIE, Q2, IF: 2.397, on upcoming issue on "Recent Advances of Next Generation Wireless Communication and Networks" (tentative title, currently under process).
- Reviewer: IEEE Transactions on Systems Man Cybernetics-Systems, SCIE, Q1, IF: 13.451.
- Reviewer: Complex & Intelligent Systems, SCIE, Q1, IF: 4.927.
- Reviewer: Sensors, SCIE, Q1, IF: 3.576.
- Reviewer: IEEE Access, SCIE, Q1, IF: 3.367.
- Reviewer: Sustainability, SCIE, Q2, IF: 3.251.
- Reviewer: Applied Sciences, SCIE, Q2, IF: 2.679.
- Reviewer: Transactions on Emerging Telecommunications Technologies, SCIE, Q3, IF: 2.638.
- Reviewer: International Journal of Communication Systems, SCIE, Q3, IF: 2.047.
- Reviewer: Security and Communication Networks, SCIE, Q3, IF: 1.791.
- Technical program committee member in ICISN, 2022, Honoi, Vietnam (Conference).
- Technical program committee member in ICONCS, 2020, Dhaka, Bangladesh (Conference).
- Reviewer in IC4IR, 2021, Dhaka, Bangladesh (Conference).
- Reviewer in ICEEICT, 2021, Dhaka, Bangladesh (Conference).
- Reviewer in TCCE, 2020, Dhaka (Conference).
- Dr. Fatema Rashid Best Paper Award, ICECE, Dhaka, 2014.

Personal Information

• Father's Name	: Sultan Mahmud
• Mother's Name	: Kawser Banu
• Gender	: Male
• Date of Birth	: 20-08-1990
• Nationality	: Bangladeshi (By Birth)
• Religion	: Islam (Sunni)
• Marital Status	: Married
• Permanent Address	: House No 55, Road No 02, Abhawa Office Road, East Babukha, Rangpur-5400.

References

Dr. Kesheng (John) Wu

Senior Computer Scientist
Group Lead
Berkeley Lab
1 Cyclotron Road
Berkeley, CA, 94720.

Email: KWu@lbl.gov

Dr. Mariam Kiran

Research Scientist

Berkeley Lab
1 Cyclotron Road
Berkeley, CA, 94720.

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Dr. You-Ze Cho

Professor
School of Electronic and Electrical Engineering
Kyungpook National University, Daegu, Korea.

Email: yzcho@ee.knu.ac.kr

Declaration

I do hereby declare that the above information is true and correct to the best of my knowledge.

Dr. Imtiaz Mahmud

List of Publications

Journal Publications

[First Author]

1. **Imtiaz Mahmud**, Tabassum Lubna, and You-Ze Cho, "Performance evaluation of MPTCP on simultaneous use of 5G and 4G networks", *Sensors*, Vol. 22, Issue. 19, pp. 7509, Oct. 2022.

2. **Imtiaz Mahmud** and You-Ze Cho, "LECAR: location estimation-based congestion-aware routing protocol for sparsely deployed energy-efficient UAVs", *Sensors*, Vol. 21, Issue. 21, pp. 7192, Oct. 2021.

3. **Imtiaz Mahmud**, Tabassum Lubna, Geon-Hwan Kim, You-Ze Cho, "BA-MPCUBIC: bottleneck-aware multipath CUBIC for multipath-TCP", *Sensors*, Vol. 21, Issue. 18, pp. 6289, Sep. 2021.

4. **Imtiaz Mahmud**, Tabassum Lubna, Yeong-Jun Song, and You-Ze Cho, "Coupled Multipath BBR (C-MPBBR): a efficient congestion control algorithm for multipath TCP", *IEEE Access*, Vol. 8, pp. 165497-165511, Sep. 2020.

5. **Imtiaz Mahmud** and You-Ze Cho, "BBR Advanced (BBR-A) – reduced retransmissions with improved fairness", *ICT Express*, Vol. 6, Issue 4, pp. 343-347, Dec. 2020.

6. **Imtiaz Mahmud**, Geon-Hwan Kim, Tabassum Lubna, and You-Ze Cho, "BBR-ACD: BBR with advanced congestion detection", *Electronics*, Vol. 9, No. 136, pp. 1-19, Jan. 2020.

7. **Imtiaz Mahmud** and You-Ze Cho, "Adaptive hello interval in FANET routing protocols for Green UAVs"; *IEEE Access*, Vol. 7, pp. 63004-63015, 2019.

8. **Imtiaz Mahmud** and You-Ze Cho, "Detection avoidance and priority-aware target tracking for UAV group reconnaissance operations"; *Journal of Intelligent and Robotic Systems*, Vol. 92(2), pp. 381-392, 2018.

9. **Imtiaz Mahmud**, Ji-Sub Park, Young-Chul Shin, Jun-Chan Choi, Byeonggon Kim, Han Jae Shin, Yoonseuk Choi, and Hak-Rin Kim, "Influence of substrate surface energy and surfactant on crystalline morphology and surface defect density in hydrothermally-grown ZnO nanowires"; *Materials Science in Semiconductor Processing*, Vol. 77, pp. 64-73, 2018.

[Co-author]

1. Nahida Islam, Md. Sazzadur Rahman, **Imtiaz Mahmud**, Md. Nur Amin Sifat, and You-Ze Cho, "A blockchain-enbled distributed advanced metering infrastructure secure communication (BC-AMI)", Applied Sciences, Vol. 12, Issue. 14, pp. 7274, Jul. 2022.

2. Motahara Sabah Mredula, Noyon Dey, Md. Sazzadur Rahman, **Imtiaz Mahmud**, and You-Ze Cho, "A review on the trends in event detection by analyzing social media platforms' data", *Sensors*, Vol. 22, Issue. 12, pp. 4531, Jun. 2022.

3. Tabassum Lubna, **Imtiaz Mahmud**, Geon-Hwan Kim, and You-Ze Cho, "D-OLIA: a hybrid MPTCP congestion control algorithm with network delay estimation", *Sensors*, Vol. 21, Issue. 17, pp. 5764, Aug. 2021.

4. Afsana Nowrin, Sharmin Afroz, MD. Sazzadur Rahman, **Imtiaz Mahmud**, and You-Ze Cho, "Comprehensive review on facemask detection techniques in the context of Covid-19"; *IEEE Access*, Vol. 9, pp. 106839-106864, Jul. 2021.

5. Yeong-Jun Song, Geon-Hwan Kim, **Imtiaz Mahmud**, Won-Kyeong Seo, and You-Ze Cho, "Understanding of BBRv2: Evaluation and Comparison with BBRv1 Congestion Control Algorithm"; *IEEE Access*, Vol. 9, pp. 37131-37145, Feb. 2021.

6. Geon-Hwan Kim, Yeong-Jun Song, **Imtiaz Mahmud**, and You-Ze Cho, "Adaptive decrease window for BALIA (ADW-BALIA): congestion control algorithm for throughput improvement in nonshared bottlenecks", Electronics, Vol. 10, Issue 3, No. 294, pp. 1-20, Jan. 2021.

7. Tabassum Lubna, **Imtiaz Mahmud**, and You-Ze Cho, "D-LIA: dynamic congestion control algorithm for MPTCP", *ICT Express*, Vo. 6, Issue 4, pp. 263-268, Dec. 2020.

8. Ji-Sub Park, **Imtiaz Mahmud**, Han Jae Shin, Min-Kyu park, Amid Ranjkesh, Do Kyung Lee, and Hak-Rin Kim, "Effect of surface energy and seed layer annealing temperature on ZnO seed layer formation and ZnO nanowire growth"; *Applied Surface Science*, Vol. 363, pp. 132-139, 2016.

9. Min-Kyu Park, Ho Jun Lee, Ji-Sub Park, Mugeon Kim, Jeong Min Bae, **Imtiaz Mahmud** and Hak-Rin Kim, "Design and fabrication of multi-focusing microlens array with different numerical apertures by using thermal reflow method"; *Journal of the Optical Society of Korea*, Vol. 18, No, 1, pp. 71-77, Feb. 2014.

10. Md. Sazzadur Rahman, Md. Walid Islam, **Imtiaz Mahmud** and Md. Mehedi Islam, "Design of grid-connected photovoltaic systems and technical requirements in case of grid failure"; *International Journal of Electronics and Informatics*, Vol. 2, No, 2, pp. 9-15, Dec. 9, 2013.

Conference Publications

[Oral Presentations]

1. **Imtiaz Mahmud** and You-Ze Cho, "Performance of multipath TCP schedulers in concurrent use of 5G and 4G networks", 27th Asia-Pacific Conference on Communications (APCC'22), Jeju, Korea, Oct 19-21, 2022, IEEE. (accepted)

2. Geon-Hwan Kim, Yeong-Jun Song, **Imtiaz Mahmud**, and You-Ze Cho, "Enhanced BBR congestion control algorithm for improving RTT fairness", Eleventh International Conference on Ubiquitous and Future Networks (ICUFN'19), Zagreb, Croatia, July 2-5, 2019, IEEE.

3. Geon-Hwan Kim, **Imtiaz Mahmud**, and You-Ze Cho, "Fairness improvement of BBR congestion control algorithm for different RTT flows", 2019 International Conference on Electronics, Information, and Communication (ICEIC'19), Auckland, New Zealand, Jan 22-25, 2019, IEEE

4. Tabassum Lubna, **Imtiaz Mahmud**, and You-Ze Cho, "Dynamic congestion control algorithm for multipath transport protocols"; The 9th International Conference on ICT Convergesnce (ICTC'18), Jeju, Korea, October 17-19, 2018.

5. Geon-Hwan Kim, **Imtiaz Mahmud**, and You-Ze Cho, "Hello-message transmission-power control for network self-recovery in FANETs"; Tenth International Conference on Ubiquitous and Future Networks (ICUFN'18), Prague, Czech Republic, July 3-6, 2018, IEEE.

6. **Imtiaz Mahmud**, Tabassum Lubna, and You-Ze Cho, "Adaptive hello message for reducing energy consumption in UAV based ad-hoc network"; 27th Joint Conference on Communications and Information (JCCI'18), Yeosu, Korea, May 2-4, 2018.

7. Geon-Hwan Kim, **Imtiaz Mahmud**, and You-Ze Cho, "Self-recovery scheme using neighbor information for multi-drone ad hoc networks"; 23rd Asa-Pacific Conference on Communications (APCC'17), Perth, WA, Australia, December 11-13, 2017, IEEE.

8. **Imtiaz Mahmud**, Geon-Hwan Kim, Eung-Hyup Kim, and You-Ze Cho, "Detection avoidance and priority-aware target tracking mechanism for a group of UAVs"; 27th Joint Conference on Communications and Information (JCCI'17), Busan, Korea, April 26-28, 2017.

9. Geon-Hwan Kim, Jae Choong Nam, **Imtiaz Mahmud**, and You-Ze Cho, "Multi-drone control and network self-recovery for flying Ad Hoc networks"; Eighth International Conference on Ubiquitous and Future Networks (ICUFN'16), Vienna, Austria, July 5-8, 2016, IEEE.

10. **Imtiaz Mahmud**, Ji-Sub Park, Han Jae Shin, Min-Kyu Park, Do Kyung Lee and Hak-Rin Kim, "Effect of surface wettability controlled by ultraviolet-ozone treatment on spin-coated ZnO seed layer and ZnO nanowires grown by hydrothermal method"; 8th International Conference on Electrical and Computer Engineering, Pan Pacific Sonargaon, Dhaka, Bangladesh, December 20-22, 2014; Sponsored by IEEE.
    Awarded: Dr. Fatema Rashid Best Paper Award: 3rd Position.

11. Md. Sazzadur Rahman, **Imtiaz Mahmud**, A.H.M. Tasbir Farid, Anjoy Kumar and Md. Mehedi Islam, "Co-operative solar energy: A way to enlighten the tribal people of Bangladesh cost effectively and hence reduce carbon emission"; National Seminar and Exhibition on Renewable Energy, April 6-8, 2013.

12. **Imtiaz Mahmud**, Md. Olioul Islam, Md. Sazzadur Rahman, Md. Walid Islam, A.H.M Tasbir Farid, "Co-operative solar energy: A proposal to enlighten the tribal people in Bangladesh"; 3rd International Conference on Environmental Aspects of Bangladesh, The University of Kitakyushu, Kitakyushu, Japan, October 13-14, 2012

13. Md. Walid Islam, Md. Sazzadur Rahman, Mohammed Minhazur Rahman, Md. Olioul Islam and **Imtiaz Mahmud**, "Economic feasibility study of solar powered street lights in Bangladesh"; National Conference on Renewable Energy, Khulna University, 2011.

[Poster Presentations]

1. Ji-Sub Park, Joon-Chan Choi, **Imtiaz Mahmud** and Hak-Rin Kim, "Fabrication of metal ink based electrode on flexible film with high conductivity by applying polymeric buffer layer and transfer printing method"; 8th International Symposium on Flexible Organic Electronics, Thessaloniki, Greece, July 6-9, 2015.

2. **Imtiaz Mahmud**, Ji-Sub Park, Han Jae Shin, Joon-Chan Choi, Byeong-Gon Kim, Min-Kyu Park and Hak-Rin Kim, "Enhanced H_2S gas sensing by higher aspect ratio and density ZnO nanowires via substrate surface energy control in hydrothermal method"; Nano Korea Symposium, Coex, Seoul, Korea, July 1-3, 2015.

3. Joon-Chan Choi, Ji-Sub Park, Gyeong-Tae Park, Jae-Hyun Kim, Min-Kyu Park, **Imtiaz Mahmud**, Jin-Hyuk Bae and Hak-Rin Kim, "Fabrication of conductive electrode on flexible substrate using Ag nanoparticle ink by transfer printing method"; The 21st International Display Workshops, TOKI MESSE Niigata Convention Center, Niigata, Japan, December 3-5, 2014

4. Ji-Sub Park, Gyeong-Tae Park, Jae-Hyun Kim, **Imtiaz Mahmud**, Joon-Chan Choi, Jeong Min Bae, Jin-Tae Kim, Jin-Hyuk Bae and Hak-Rin Kim, "Highly conductive electrode pattern on flexible film using metal ink via thermal sintering and transfer printing process"; International Conference on Electronic Materials and Nanotechnology for Green Environment, Ramada Plaza Jeju Hotel, Jeju, Korea, November 16-19, 2014.

5. **Imtiaz Mahmud**, Ji-Sub Park, Han Jae Shin, Min-Kyu Park, Do Kyung Lee and Hak-Rin Kim, "Controlled growth of ZnO nanorods via surface energy control through UV Ozone pretreatment"; The 7th Asia-Pacific Conference on Transducers and Micro/Nano Technologies, Exco, Daegu, Korea, June 29 - July 2, 2014.

6. **Imtiaz Mahmud**, A.H.M Tasbir Farid, Md. Sazzadur Rahman and Zahid Hasan Mahmood, "Study on the band-gap of nano silicon using nanotechnology to enhance the efficiency of PV solar cell"; International Workshop on Nanotechnology, University of Dhaka and Bangladesh University of Engineering & Technology, September 21-23, 2012.