

# Hasan Iqbal

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## Education

**Ph.D. Candidate**, Computer Science and Engineering 2018 - 2024 (Expected)

**University of Connecticut (UConn)**, Storrs, CT

Dissertation: High-dimensional Quantum Key Distribution: New Protocols and Analysis.

Advisor: Dr. Walter O. Krawec.

**MS**, Computer Science

2015 - 2017

**University of Illinois at Chicago (UIC)**, Chicago, IL

**BS**, Information Technology

2009 - 2013

**IIT, University of Dhaka**, Dhaka, Bangladesh

## Experience

**Research Assistant, UConn**

2018 - Present

Development and analysis of new high-dimensional quantum key distribution (HD-QKD) protocols with a focus on resource minimization to help in practical implementations.

**Teaching Assistant, UConn**

2018 - Present

Cybersecurity: Designed assignments, conducted and graded labs, and held office hours.

Programming Languages: Graded homework, exams, and held office hours.

**Teaching Assistant, UIC**

2015 - 2017

C/C++, Matlab: Conducted labs, reinforced lessons, and held office hours for a large student population. Received 4.3/5 in student ratings.

## Publications

1. Analysis of a High-Dimensional Extended B92 Protocol. H. Iqbal and W.O. Krawec. Quantum Information Processing 20 (10) 344, 2021.
2. High-Dimensional Semi-Quantum Cryptography. H. Iqbal and W.O. Krawec. IEEE Transactions on Quantum Engineering, vol. 1, pp. 1-17, 2020.
3. Semi-quantum Cryptography. H. Iqbal and W.O. Krawec. Quantum Information Processing 19 (3) 97, 2020.
4. From Classical to Semi-Quantum Secure Communication. A. Gagliano, W.O. Krawec, and H. Iqbal. IEEE ISIT 2019.

## Preprints

1. New Security Proof of a Restricted High-Dimensional QKD Protocol. H. Iqbal and W.O. Krawec. arXiv:2307.09560.

## Awards

Conference participation award, Graduate School, UConn	July 2023
Summer dissertation fellowship, Graduate School, UConn	April 2023
Synchrony Financial fellowship, CSE, UConn	2021 - 2022, 2023
Pre-doctoral fellowship award, CSE, UConn	May 2023/22/21/20

## Presentations and Posters

1. New Security Proof of HD-3-State-BB84 Protocol, Quantum Optics Seminar, NIST (Online).  
October 2023
2. New Security Proof of HD-3-State-BB84 Protocol, QCrypt poster, UMaryland. August 2023
3. HD-B92 Protocol, SOE poster competition, UConn. April 2021
4. HD-Semi-quantum Key Distribution, CSE Security Seminar, UConn. November 2020
5. Fully Device-independent QKD, Quantum Network Seminar, UMass/CQN. July 2020
6. HD-Semi-quantum Key Distribution, SOE poster competition, UConn. March 2020

## Professional Services

1. Served as reviewer for the journal IEEE Internet of Things.
2. Served as reviewer for the journal IEEE/ACM Transactions on Networking.

## University Services

1. Volunteered for showcasing research to the undergraduate students. October 2023
2. Volunteered as a student leader in welcoming new engineering graduate students. August 2022
3. Served as an Orientation Representative for international students. Dec '19, Aug '19
4. Volunteered for the School of Engineering research showcase. March 2019

## References

### **Dr. Walter O. Krawec**

Associate Professor, Computer Science and Engineering, University of Connecticut  
walter.krawec@uconn.edu, (860) 486-5523

### **Dr. Bing Wang**

Professor, Computer Science and Engineering, University of Connecticut  
bing@uconn.edu, (860) 486-0582

### **Dr. Alexander Russell**

Professor, Computer Science and Engineering, University of Connecticut  
acr@uconn.edu, (860) 486-4290

### **Dr. Sanguthevar Rajasekaran**

Professor, Computer Science and Engineering, University of Connecticut  
sanguthevar.rajasekaran@uconn.edu, (860) 486-2428