Md Salman Ahmed

http://people.cs.vt.edu/ahmedms/

Email : ahmedms@vt.edu
Mobile : +1-423-741-6519

EDUCATION

- **Virginia Tech**   Blacksburg, VA

  PhD Student (3rd Year) in Computer Science, GPA: 3.90   Aug 2017 – Present

  Thesis: Quantitative evaluation of attack surface reduction in the presence of fine-grained code randomization and re-randomization (tentative)

  Advisor: Dr. Danfeng (Daphne) Yao, Professor

  PhD Committee Members
  1. Danfeng (Daphne) Yao (Chair), Professor, Computer Science, Virginia Tech
  2. Gang Wang, Assistant Professor (member), Computer Science, Virginia Tech
  3. Matthew Hicks, Assistant Professor (member), Computer Science, Virginia Tech
  4. Patrick R. Schaumont (Member), Professor, Electrical and Computer Engineering, Virginia Tech
  5. Fabian Monrose (External Member), Professor, Computer Science, University of North Carolina at Chapel Hill

- **East Tennessee State University**   Johnson City, TN

  Master of Science in Computer Science; GPA: 3.89   Aug 2015 – Dec 2017

  Thesis: An Investigation into the Performance Evaluation of Connected Vehicle Applications: From Real-World Experiment to Parallel Simulation Paradigm

  Advisor: Dr. Mohammad A. Hoque, Assistant Professor

- **Bangladesh University of Engineering & Technology**   Dhaka, Bangladesh

  Bachelor of Science in Computer Science and Engineering; GPA: 3.51   Jan 2008 – Feb 2013

  Thesis: Audio Steganography with Quantum Key Cryptography

  Advisor: Dr. Mohammad Kaykobad, Professor

PROFESSIONAL APPOINTMENTS

- **Virginia Tech**   Blacksburg, VA

  Research and Teaching Assistant   Aug 2017 - Present

- **East Tennessee State University**   Johnson City, TN

  Research and Teaching Assistant   Aug 2015 - May 2016

- **Banc Intranets**   Johnson City, TN

  Software Developer Intern   Summer 2016 and 2017

- **Samsung R&D**   Suwon, South Korea & Dhaka, Bangladesh

  Software and Senior Software Engineer   Mar 2013 - Aug 2015

RESEARCH INTERESTS

System Security; Program Analysis; Security of Embedded Systems; Data-driven Security; Security in Connected Vehicle Technology.

AWARDS

- ETSU School of Graduate Studies Outstanding Thesis in Science, Math, Technology, and Computer Science (**2018**)
- Tennessee Conference of Graduate Schools Outstanding Master's Thesis (**2018**)
- Outstanding Computing Graduate Student Award, Department of Computing, East Tennessee State University (**2017**)
- Best Paper Award (3rd Place), Graduate Student Competition of the ACM-Mid Southeast Conference, TN (**2016**)
- Samsung R&D Icon of the Month Award, Samsung R&D Institute Bangladesh (**2015**)
- IEEEXtreme Programming Contest 10.0 (18th Place in USA) (**2016**)
- IEEEXtreme Programming Contest 9.0 (51st Place in USA) (**2015**)
- Dean's List for outstanding result in the 4th year at BUET (**2012**)

Publications

Refereed Conference Proceedings

1. [**Under Review**] **Md Salman Ahmed**, Ya Xiao, Danfeng (Daphne) Yao, Kevin Z. Snow, Gang Tan, and Fabian Monrose. "Measuring Attack Surface Reduction in the Presence of Fine-grained Code Randomization."

2. [**SecDev'19**] Long Cheng, Hans Liljestrand, **Md Salman Ahmed**, Thomas Nyman, Trent Jaeger, N. Asokan, and Danfeng (Daphne) Yao. "Exploitation Techniques and Defenses for Data-Oriented Attacks. *IEEE Secure Development Conference (SecDev).* McLean, VA. Sept. 2019.

3. [**SecDev'18**] **Md Salman Ahmed**, Danfeng (Daphne) Yao, and Haipeng Cai. "POSTER: Extracting Anti-specifications from Vulnerabilities for Program Hardening." *IEEE Secure Development Conference (SecDev).* Cambridge, MA. Sept. 2018.

4. [**CarSys'17**] **Md Salman Ahmed**, Mohammad A Hoque, Jackeline Rios-Torres, and Asad Khattak. "Demo: Freeway Merge Assistance System using DSRC," In Proceedings of the *2nd ACM International Workshop on Smart, Autonomous, and Connected Vehicular Systems and Services*, pp. 83-84, Snowbird, Utah, USA, October, 2017.

5. [**VNC'16**] **Md Salman Ahmed** and Mohammad A Hoque. "Partitioning of Urban Transportation Networks Utilizing Real-world Traffic Parameters for Distributed Simulation in SUMO," In Proceedings of *IEEE Vehicular Network Conference (VNC)*, Columbus, OH, USA, 2016.

6. [**VNC'16**] **Md Salman Ahmed** and Mohammad A Hoque. "Demo: Real-time Vehicle Movement Tracking on Android Devices Through Bluetooth Communication with DSRC Devices," In Proceedings of *IEEE Vehicular Network Conference (VNC)*, Columbus, OH, USA, 2016

7. [**SoutheastCon'16**] **Md Salman Ahmed**, Mohammad A Hoque, and Phil Pfeiffer. "Comparative Study of Connected Vehicle Simulator," In Proceedings of *IEEE Southeast Conference (SoutheastCon)*, pp. 1-7, Norfolk, VA, 2016.

Journal Articles

1. **Md Salman Ahmed**, Mohammad A Hoque, Jackeline Rios-Torres, Asad Khattak, and Brian Bennett. "A Decentralized Cooperative Freeway Merge Assistance System using Connected Vehicles," IEEE *Transactions on Intelligent Transportation Systems* (Impact factor 3.724) (Under review).

2. Mohammad A Hoque, Xiaoyan Hong, and **Md Salman Ahmed**. "Parallel Closedloop Connected Vehicle Simulator for Large-scale Management of Transportation Networks: Challenges, Issues, and Solution Approaches," IEEE *Intelligent Transportation Systems Magazine* (Impact Factor: 3.65) (in press).

3. **Md Salman Ahmed**, Jennifer Houser, Mohammad A Hoque, Rezaul Raju, Phil Pfeiffer. "Reducing Inter-process Communication Overhead in Parallel Sparse Matrix-Matrix Multiplication," International Journal of *Grid and High-Performance Computing*, Vol. 9, No. 3, 2017. (Impact Factor: 0.57).

Press Coverage

- Alumnus Md Salman Ahmed receives outstanding thesis award, ETSU News (**2018). Link**

Leadership Activities

- Team leader for IEEEXtreme Programming Contest 9.0 and 10.0 (**2016 & 2017**)

Selected Academic Projects

- **Automatic Commit Generator**: Generates commit messages from source code differences between two version of a software. The source code differences are described using a natural language description and then the natural language description is translated into commit messages using a pre-trained neutral machine translation model.

- **Company Information Tracker**: A software tool that manages all kinds of information of small companies hosted in ETSU Innovation Lab. The tool also tracks their leases and resources, grants, survey information, etc.

- **Network Pool**: A simple pool game with multi-player support.

- **Compiler**: A compiler capable of generating intermediate code (assembly x86) from Pascal program.

- **Blinds' Eye**: A navigation tool for blind people using Ultrasonic sensor, MicroSD card and Micro-controller. The interfacing language was C.

- **4-bit CPU**: A navigation tool for blind people using Ultrasonic sensor, MicroSD card and Micro-controller. The interfacing language was C.

References

Available upon request.