Sudip Maitra

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Research Interest

Currently, I am interested in developing and implementing hw/sw assisted secure computing frameworks for cellular applications. Broadly, my area of expertise includes trusted computing, embedded security, and cyber-physical systems.

Education

PhD in ECE Virginia Tech, VA Advisor: Angelos Stavrou	August 2020 - Present	Current GPA: 3.8/4.0
MS in Engineering Central Michigan University, MI Advisor: Kumar Yelamarthi	July 2020	GPA: 3.8/4.0
B.Sc. in EEE AUST, Dhaka, Bangladesh	January 2016	GPA: 3.68/4.0

Publications

- T. Atalay, **S. Maitra**, D. Stojadinovich, A. Stavrou, H. Wang, "Securing 5G OpenRAN with a Scalable Authorization Framework for xApps", in *IEEE International Conference on Computer Communications*, New York, May 2023.
- **S. Maitra**, K. Yelamarthi, "Rapidly Deployable IoT Architecture with Data Security: Implementation and Experimental Evaluation", in *MDPI Sensors Journal*, vol. 19, no. 11, May. 2019.
- **Maitra, S**, Yanambaka, VP, Puthal, D, Abdelgawad, A, Yelamarthi, K. Integration Of Internet Of Things and Blockchain Toward Portability and Low-Energy Consumption. Trans Emerging Tel Tech. 2021; 32:e4103.
- **S. Maitra**, V. P. Yanambaka, A. Abdelgawad, D. Puthal and K. Yelamarthi, "Proof-of-Authentication Consensus Algorithm: Blockchain-based IoT Implementation," *2020 IEEE 6th World Forum on Internet of Things (WF-IoT)*, New Orleans, LA, USA, 2020, pp. 1-2.
- **S. Maitra**, D. Richards, A. Abdelgawad, and K. Yelamarthi, "Performance Evaluation of IoT Encryption Algorithms: Memory, Timing, and Energy", in *Proceedings of the IEEE Sensors Applications Symposium (SAS)*, Sophia Antipolis, France, 2019, pp. 1-6.
- **S. Maitra**, A. Abdelgawad, and K. Yelamarthi, "Lab in a Box: A Rapidly Deployable Environmental Monitoring IoT System", in *Proceedings of the 62nd IEEE International Midwest Symposium on Circuits and Systems*, Dallas, TX, USA, 2019.
- **S. Maitra**, V. P. Yanambaka, A. Abdelgawad and K. Yelamarthi, "Securing a Vehicle Fleet Management Through Blockchain and Internet of Things," *2020 IEEE International Symposium on Smart Electronic Systems (iSES) (Formerly iNiS)*, Chennai, India, 2020, pp. 151-154.

Projects

- **Securing 5G**
  Securing critical 5G core and RAN components using hardware-assisted isolation mechanisms.
- **Secure USB**
  A framework for remote authentication of USB devices, providing an additional layer of protection for online accounts and sensitive information.
- **Assistive Technology**
  A walking stick with advanced features for the visually impaired including the ability to notify emergency services in case of danger.
- **Lab in a Box**
  Highly portable, low power IoT sensing device for environmental monitoring and wearable diagnostic device for elderly patients.

Honors and Awards

- Graduate Research Grant, Office of Research and Graduate Studies, Fall 2018-19, CMU
- Graduate Presentation Grant, Spring '19, CMU
- Graduate Conference Grant, Spring '19, CMU
- Graduate Teaching Assistant Professional Development Certificate, Fall '18, CMU
- International Teaching Assistant Program certificate, Fall '18, CMU
- Runner up in Engenius15 inter university tech competition, Fall '15, AUST
- Runner up in 4th DUITS National Campus IT Fest 2015 at Dhaka University
- Runner up in CSE week 2014, AUST
- 1st prize in EEE project competition Spring '13, AUST
- 1st prize in EEE Hardware & Software project fest Fall '13, AUST

Teaching

- Internet of Things: Standards, Protocols, and Applications (EGR 597E)
- Microelectronics Circuits II (EGR 392)
- Computer Aided Problem Solving for Engineers (EGR 200)
- Digital Circuits (EGR 190QR)

Labs and Projects developed for Central Michigan University

- Design and implementation of Vehicular Sensor Learning (VSL) platform for EGR 190QR course
- Assisting in the composition of lab instruction manuals and course development for EGR 190QR
- Assisting in the composition of lab instruction manuals and course development for EGR 597E

Talks

- Lab in a Box: A Rapidly Deployable Environmental Monitoring IoT System, IEEE International Midwest Symposium on Circuits and Systems, Aug 5, 2019
- Performance Evaluation of IoT Encryption Algorithms: Memory, Timing, and Energy, Annual Student Research and Creative Endeavors Exhibition, Apr 17, 2019

Experience

- Research Assistant at Virginia Tech from August 2020
- Teaching Assistant at Central Michigan University, MI
- Research and Development Engineer at Weaver Innovation (April 2017 - July 2018), Dhaka, Bangladesh
- Service Engineer at Neomed Healthcare Services (March 2016 - June 2018), Dhaka, Bangladesh

Skills

- Languages: C, C++, MATLAB, Embedded C, Assembly, Python, Lua
- TEEs: Intel SGX, AMD SEV, ARM TrustZone, Samsung KNOX
- CI/CD: Kubernetes, Docker
- Security: Tamarin Prover, AVISPA
- Embedded Platforms: Atmel AVR, 8051, Intel 8086, STM8, STM32, Microchip PIC, Microchip ATSAMD, TI MSP series, Raspberry Pi, ESP8266, ESP32