

## CHUADHRY MUJEEB AHMED (*PhD Candidate*)

Singapore University of Technology and Design

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### Education

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<b>PhD Candidate</b>	<b>Singapore University of Technology and Design</b>	Jan. 2015 – Present
Information Systems Technology and Design		CGPA: 4.25/5.0

**Research Topic:** *Model based Attack Detection Schemes in Cyber Physical Systems*

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<b>M.S.</b>	<b>Seoul National University, South Korea</b>	2010 – 2012
Electrical Engineering and Computer Science		CGPA: 4.05/4.30

**Thesis:** *Dynamic Access Control and Power Allocation in Femtocell Networks*

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<b>B.S.</b>	<b>Institute of Space Technology, Pakistan</b>	2004 - 2008
Communication Systems Engineering		CGPA: 3.61/4.0 (CUM LAUDE)

**Thesis:** *Design, Fabrication and Testing of Low Noise Amplifier at Ku-band*

### Selected Conference Publications

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1. **Chuadhry Mujeeb Ahmed** et al., "NoisePrint: Attack Detection Using Sensor and Process Noise Fingerprint in Cyber Physical Systems," ACM AsiaCCS 2018 (**Acceptance Rate: 20%**).
  2. **Chuadhry Mujeeb Ahmed**, Aditya Mathur, Martin Ochoa, "NoiSense: Detecting Data Integrity Attacks on Sensor Measurements using Hardware based Fingerprints," <https://arxiv.org/abs/1712.01598>
  3. **Chuadhry Mujeeb Ahmed**, Carlos Murguia and Justin Ruths, "Model-based Attack Detection Scheme for Smart Water Distribution Networks," ACM AsiaCCS, April 2017 (**Acceptance Rate: 20%**).
  4. **Chuadhry Mujeeb Ahmed**, Aditya Mathur, "Hardware Identification via Sensor Fingerprinting in a Cyber Physical System," IEEE QRS 2017.
  5. **Chuadhry Mujeeb Ahmed** and Jongwon Kim, "Context Aware Network-Assisted Hand-off Management and Interference Mitigation Scheme for Heterogeneous Networks," IEEE WCNC Istanbul, April 2014.
  6. **Chuadhry Mujeeb Ahmed**, Sung-Guk Yoon and Saewoong Bahk, "Self-Organizing Neighbor Cell List and Conflict-Free Physical Cell ID Assignment in LTE Femtocells," IEEE APWCS Singapore, 22-23 Aug. 2011 (**Student Paper Award**)

### Journal Publications

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1. **Chuadhry Mujeeb Ahmed** and Sung-Guk Yoon, "Dynamic Access and Power Control Scheme for Interference Mitigation in Femtocell Networks," KSII Transactions on Internet and Information Systems, 2015.
  2. **Chuadhry Mujeeb Ahmed**, "Repetition Coding and Equal Power Allocation Scheme for JPEG Image Transmission Over MIMO Systems," International Journal of Interdisciplinary Telecommunications and Networking (IJITN), June 2016.
  3. **Chuadhry Mujeeb Ahmed**, Noshewan Shoaib and Iftikhar Mahmood, "Design, Analysis and Optimization of Multistage Amplifier at Ku band," IEEE Journal of Space Technology, vol. 1, June 2011. (**Best Research Project Award/gold medal by Pakistan Telecommunication Authority**)

### Selected Workshop Presentations

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1. Rizwan Qadeer, Carlos Murguia, Chuadhry Mujeeb Ahmed, Justin Ruths, "Multistage Downstream Attack Detection in a Cyber Physical System," CyberICPS ESORICS 2017.
  2. Jay Prakash, **Chuadhry Mujeeb Ahmed**, "Can You See Me: On Performance of Wireless Fingerprinting in a Cyber Physical System," SecCPS IEEE HASE 2017.
  3. **Chuadhry Mujeeb Ahmed**, Venkata Reddy and Aditya Mathur, "WADI: A Water Distribution Testbed for Research in the Design of Secure Cyber Physical Systems," CysWater IEEE CPSWEEK, Pittsburgh USA, April 2017.

4. **Chuadhry Mujeeb Ahmed**, Sridhar Adepu and Aditya Mathur, "Limitations of State Estimation based Cyber Attack Detection Schemes in Industrial Control Systems," SCSP-W IEEE CPSWEEK, Vienna, April 2016.

## Major Scholarships

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- Presidential Graduate Fellowship (PGF) awarded by Ministry of Education Singapore, to pursue PhD studies at SUTD, (2015 – 2019).
- Awarded fully funded scholarship by Higher Education Commission (HEC), Pakistan to pursue Masters degree program at Seoul National University, South Korea (2010 - 2012).
- Awarded full tuition fee scholarship at Institute of Space Technology, Pakistan (2004-2008).

## Academic and Professional Experience

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### Teaching Assistant

*Singapore University of Technology and Design*

- Networking with Prof. Nils O. Tippenhauer Fall Semester 2016
- Computer Systems Engineering with Prof. David Yau, Spring Semester 2017

### Lecturer (Electrical Engineering)

*HITEC University, Pakistan*

Feb. 2013 - Jan. 2015

- Taught *Object Oriented Programming, Computer Fundamentals, Network Analysis*.
- Lead the team responsible for *Washington Accord accreditation* preparation.
- Lead the team to present Self-Assessment Report at Higher Education Commission, Pak.
- Lead the team to standardize laboratory experiments at under-graduate level.
- Academic class advisor for a batch of 200 students.

### Graduate Researcher

*NETLAB, SNU*

Mar. 2010 - Feb. 2012

- Proposed a method to allocate physical cell ID based on geo-location for femtocell networks.
- Proposed interference mitigation method to enhance network-wide throughput in a 4G femto.
- Proposed an information exchange protocol between femto-macrocell and control station.

### Assistant Manager, RF

*SUPARCO, Pakistan*

Sep. 2008 - Mar. 2010

- Designed low noise amplifier at Ku-band for front-end communication system of transponder.
- Site planning and survey to install antennae for a satellite ground station.

## Honors & Awards

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- Represented SUTD at United Nations University Scholars Leadership Symposium (USLS) August 1-7, 2018, Bangkok Thailand.
- Awarded Kulicke and Soffa Research Showcase Prize 2018 at FIRST industry workshop 25 July 2018, Singapore.
- Asia-Pacific Association for International Education (APAIE) Student Ambassador, 25-29 March 2018.
- Travel grant to participate in AaiaCCS 2018, Seoul South Korea.
- Selected to be part of Science Technology and Policy workshop 2018, organized by MIT, ETH, NUS, CREATE, SUTD, NTU at CREATE campus Singapore 16-20 July 2018.
- Travel Grant to attend Crypto-BG 2017, summer school in Bulgaria.
- Accommodation Grant to attend ACM AsiaCCS 2017, Abu-Dhabi, UAE.
- Awarded **student grants** to attend *Black Hat Asia 2017*.
- Travel and Accommodation grant to attend *summer school on Social Networks Security, Privacy and Trust (SNSPT) 2016*, University of Padua-Italy 2016.
- Student Travel grant to attend *IEEE CPS WEEK 2016*-Austria.
- Won 2<sup>nd</sup> prize for best innovation at **start-up weekend** Islamabad, April 2014.
- Research **fellowship** award at Gwangju Institute of Science and Technology, S. Korea.
- **DAAD fellowship** for summer academy at TU Ilmenau, Germany (18-29 July 2011).
- Won men's double **badminton championship** at EE Department SNU, Korea (2011).

- Awarded Vice Chancellor **gold medal** in final year of under-graduate studies for excellent academic performance (2008).
- Awarded **best writer** medal at Institute of Space Technology Islamabad (IST) 2008.
- Awarded second prize in parliamentary style **declamations** at IST, Pakistan.

#### Academic Services

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- **Reviewer:** The Journal of Franklin Institute 2018
- **Member** Technical Program Committee IEEE Wireless Telecommunication Symposium 2018.
- **Local arrangement chair** for IEEE international workshop SecCPS-2017, Singapore.
- **Reviewer** for KSII Transactions on Internet and Information Systems.

#### Research Talks

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- Talk at SIG Group 5: CPS and IoT Security, 20 July 2018, at Singapore Cyber Security Consortium at National University of Singapore.
- Talk at SIG Group 5: CPS and IoT Security, 24 November 2017, at Singapore Cyber Security Consortium at National University of Singapore.
- On Attack Detection in Cyber Physical Systems, CryptoBG, July 2017, Bulgaria.
- Talk at SecCPS workshop in IEEE HASE 2017 and moderated a discussion session.
- On Sensor Fingerprinting in Cyber Physical Systems, at SNSPT 2016, Padova Italy.
- Hardware Identification via Sensor Fingerprinting, SG-CRC Jan. 2016.

#### Technical Skills

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- Have worked on different software packages, such as MATLAB, Python, System Identification Tools, SCADA, OPNET IT GURU, NS2, ADS (Advanced Design System), AUTOCAD, EDX (Mobile Communication), HFSS (High Frequency Simulation Software), NEC Win Plus, C++, MULTISIM, LABVIEW, C, Java, RESTful API (Flask), MySQL, HTML, CSS.

#### Social Work/Volunteer Activities

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- Participated in cultural show organized at National library for children and young adults Gangnam, South Korea.
- Participated in public awareness campaign from the platform of 'Society for the advancement of community, health, education and training (SACHET)'.
- Actively Participated in fund raising for devastating floods in Pakistan August 2010.
- Actively Participated in fund raising for devastating earthquake in Pakistan October 2005.

#### References

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Name: Aditya Mathur (PhD thesis Supervisor)  
 Position: Professor  
 Email: aditya\_mathur@sutd.edu.sg  
 Postal Address: Building 2, level 7, iTrust  
 Office, SUTD, Singapore.

Name: Jianying Zhou(PhD Thesis cosupervisor)  
 Position: Professor  
 Email: jianying\_zhou@sutd.edu.sg  
 Postal Address: 8 Sompah Road, Singapore.