

Shankar Karuppayah

Curriculum vitae

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Employment History

- 2016–present **Senior Lecturer**,
National Advanced IPv6 Centre (NAv6),
Universiti Sains Malaysia, Malaysia.
www.nav6.usm.my
- 2020–2021 **Area Head**,
Telecooperation Lab (TK),
Technische Universität Darmstadt, Germany.
www.tk.tu-darmstadt.de
- 2019–2021 **Postdoctoral Researcher**,
Telecooperation Lab (TK),
Technische Universität Darmstadt, Germany.
www.tk.tu-darmstadt.de

Education

- 2012–2016 **PhD, Cyber Security**, *Technische Universität Darmstadt*, Darmstadt, Germany.
Thesis title: Advanced Monitoring of P2P Botnets
Supervisor: Prof. Dr. Max Mühlhäuser
- 2009–2011 **MSc, Software Systems Engineering**, *King Mongkut's Univ. of Tech. North Bangkok*, Bangkok, Thailand.
Curriculum based on the syllabus of RWTH Aachen, Germany
- 2006–2009 **BSc (Hons), Computer Science**, *Universiti Sains Malaysia*, Penang, Malaysia.
Major: Networking
Minor: Management

Membership and Professional Activities

Membership

- Institute of Electrical and Electronics Engineers (IEEE)
Member
- Malaysian Research and Education Network (MyREN)
Internet Security Working Group Deputy Head
- Malaysian Board of Technologists (MBOT)
Professional Technologist

Journal Reviewer

- ACM Computing Surveys (CSUR)
- IEEE Transactions on Information Forensics & Security (T-IFS)
- IEEE Journal on Selected Areas in Communications(JSAC)
- PeerJ Computer Science
- Journal of Information Security and Applications (JISA)
- Computers and Electrical Engineering

Committees

- USM Mobile Access Coordinator (COVID-19)
- USM Industry Liaison Fellow
- USM Cyber Security Awareness Program - Subject Matter Expert












(Selected) Consultancy Projects

- 2021 **Cyber-Physical Security Design for Energy Aggregation: Applicability In The Malaysian Landscape**
A study and design on cyber-physical security design for energy aggregation domains and its application on the Malaysian market
International Grant (Co-Researcher)
- 2021 **Joint Solution Design To The Technical Problems Faced By TF-AMD**
A project to study and propose designs as solution to the technical problems faced by TF-AMD
Industry Grant (Co-Researcher)
- 2018 **Development of Laboratory Information Management System**
Design and development of a customized web-based LIMS system to facilitate the day-to-day operations of a service-based research centre within USM
Internal Project (Project Leader)
- 2017 **IoT-Based Recipe Management System**
Design and development of a in-house system to interconnect various equipment in a shop floor with recipe management and data analytics capabilities
Industry Grant (Co-Researcher)

(Selected) Research Projects

- 2021 **A periodicity-agnostic method for detecting parasitic botnets in Distributed Hash Table-based peer-to-peer networks**
An FRGS research grant study and propose methods to detect parasitic botnets in DHT-based P2P network
National Grant (Project Leader)
- 2020 **NAHRIM Enviromental Sensor System**
A study and deployment of IoT-based sensors and system funded by NAHRIM to continuously monitor water-quality
National Grant (Co-Researcher)
- 2019 **Novel P2P Botnet Detection and Endpoint Mobilization**
A Royal Bank of Canada (RBC) funded project aimed at carrying out research on advanced P2P botnet detection and countermeasures
International Industry Grant (Associate Researcher - TU Darmstadt)

(Selected) Publications

- SDN Abdijalil Abdullahi, Selvakumar Manickam, **Shankar Karuppayah**, A Review of Scalability Issues in SoftwareDefined Exchange Point (SDX) Approaches: State-of-the-Art, *IEEE Access*, **9**, 74499–74509 (2021).  doi:10.1109/ACCESS.2021.3069808
- SECS/GEM Ashish Jaisan, Selvakumar Manickam, Shams A. Laghari, Shafiq Ul Rehman, **Shankar Karuppayah**, Secured SECS/GEM: A Security Mechanism for M2M Communication in Industry 4.0 Ecosystem, *International Journal of Advanced Computer Science and Applications*, **12/8**, 241–250 (2021).  doi:10.14569/IJACSA.2021.0120828
- SECS/GEM Shams A. Laghari, Selvakumar Manickam, **Shankar Karuppayah**, Ayman Al-ani, Shafiq Ul Rehman, Cyberattacks and Vociferous Implications on SECS/GEM Communications in Industry 4.0 Ecosystem, *International Journal of Advanced Computer Science and Applications*, **12/7**, 329–336 (2021).  doi:10.14569/IJACSA.2021.0120737
- SECS/GEM Shams A. Laghari, Selvakumar Manickam, and **Shankar Karuppayah**, A Review on SECS/GEM: A Machine-to-Machine (M2M) Communication Protocol for Industry 4.0, *International Journal of Electrical and Electronic Engineering and Telecommunications*, **10/2**, 105–114 (2021).  doi:10.18178/ijeetc.10.2.105-114
- MQTT Ahmed J. Hintaw and Selvakumar Manickam and **Shankar Karuppayah**, Mohammed Faiz Aboalmaaly, A Brief Review on MQTT's Security Issues within the Internet of Things (IoT), *Journal of Communications* **6**, 463–469 (2019).  doi:10.12720/jcm.14.6.463469
- P2P Botnets **Shankar Karuppayah**, Advanced Monitoring in P2P Botnets: A Dual Perspective, *Springer*, (2018)  doi:10.1007/9789811090509
- P2P Botnets Leon Böck, Emmanouil Vasilomanolakis, Max Mühlhäuser, **Shankar Karuppayah**, Next Generation P2P Botnets: Monitoring Under Adverse Conditions, *Research in Attacks, Intrusions, and Defenses - 21st International Symposium (RAID)*, (2018)  doi:10.1007/9783030004705_24
- IDS Emmanouil Vasilomanolakis, **Shankar Karuppayah**, Max Mühlhäuser, Mathias Fischer, Taxonomy and Survey of Collaborative Intrusion Detection, *ACM Computing Surveys*, (2015)  doi:10.1145/2716260
- h-index*  (Google Scholar): 12  (Scopus): 8  (Web of Science): 5

Language Skills

English	Proficient	<i>IELTS Band 8.0</i>
Malay	Proficient	<i>National Language</i>
Deutsch	Beginner	<i>EU-CEFR Level A2</i>
Tamil	Conversational	<i>Mother Tongue</i>