

Arun Cyril Jose

Department of Electrical Electronic and Computer Engineering
University of Pretoria
Private bag X20
Hatfield
Pretoria 0028
South Africa

Education

PhD in Computer Engineering:

Department of Electrical Electronics and Computer Engineering
University of Pretoria, South Africa.
Supervisor: Prof. Reza Malekian.
June 2014 – December 2017

MS in Forensic Computing

Coventry University, Coventry, United Kingdom.
January 2010 – January 2011

B.Tech in Computer Science and Engineering

Mahatma Gandhi (MG) University, Kerala, India.
July 2006 – May 2009

Publications

1. Kevin W. G. Cowdrey, Jaco de Lange, Reza Malekian, Johan Wanneburg, Arun Cyril Jose, "Applying Queueing Theory for the Optimization of a Banking Model," **Journal of Internet Technology**, vol. 19, no. 2, pp. 381-389, March 2018. <http://jit.ndhu.edu.tw/ojs/index.php/jit/article/view/1658>
2. A. C. Jose, R. Malekian, "Improving Smart Home Security: Integrating Logical Sensing Into Smart Home," in **IEEE Sensors Journal**, vol. 17, no. 13, pp. 4269-4286, July 1, 2017. *One of the 25 most downloaded Sensors Journal papers till date since the establishment of the Journal.* <http://ieeexplore.ieee.org/document/7930376/>
3. A.C Jose, R. Malekian, N. Ye, "Improving Home Automation Security; Integrating Device Fingerprinting Into Smart Home", **IEEE Access**, vol. 4, October 2016. <http://ieeexplore.ieee.org/document/7563403/>

4. A.C Jose, R. Malekian, "Smart Home Automation Security: A Literature Review", **Smart Computing Review**, Vol. 5, No. 4, pp. 269-285, August 31, 2015. *The paper has over 11,300 complete paper reads on 'Researchgate' also it was the most read publication in the department on 'Researchgate' for 12 months.* <http://www.smartcr.org/view/vol5no4.html>

5. A. C. Jose, R. Malekian, Babedi B. Letswamotse, "Improving Smart Home Security: Integrating Behaviour Prediction Into Smart Home," **International Journal of Sensor Networks**. [In Press].

Manuscript under Preparation

"*Value of Privacy in Democracy*", The paper explains the importance of privacy in a Democracy and how an individual's private information can be used to influence his vote.

Research Interest

Smart Home Security

Device Fingerprinting

Logical Sensing from a Security Point of View

Behavior Prediction from a Security Point of View

Different online surveillance techniques

Security based social engineering

Network vulnerability detection and intrusion prevention

Network Traffic Analysis

Completely anonymous communication over the internet

Professional Activities

Reviewer:

IEEE Access Journal with impact factor of 3.244.

IEEE Sensors Journal with impact factor of 2.51.

IEEE Transactions on Intelligent Transportation Systems with impact factor of 3.724.

Journal of Internet Technology with impact factor of 1.930.

KSII Transactions on Internet and Information Systems with impact factor of 0.452.

Scholarships Received

Awarded University of Pretoria, Postgraduate Doctoral Scholarship from 2014 - 2016 worth R 15,000.

Awarded University of Pretoria, Research Support Bursary from 2014 - 2016 worth R 195,000.

Awarded University of Pretoria, Special International Research Award from 2014 - 2016 worth R 10,400.

Awarded 2017, University of Pretoria, Research Support Bursary for exceptional fourth year PhD student worth R 35,000.

Work Experience

2015 – 2017: Teaching assistant for Postgraduate Students during the Post graduate block week. Assisted Prof. Reza Malekian with the class for Honours and Master's degree students and assisted with the student presentation of their novel ideas.

Workshops & Seminars Attended

THE IEEE SUMMIT - 5G IN FUTURE AFRICA: The role of IoT, cognitive radio and cybersecurity in networking the next billion, a full day workshop held at University of Pretoria in May 2017.

An Adhoc Wireless Communications Network to Monitor Fruits on Trees in a Rural Environment: A half day lecture by an IEEE AP-S Distinguished Lecturer, Professor Monai Krairiksh held at University of Pretoria October 2015.

Student-Supervisor Relationship-Roles and Responsibilities: A half day seminar under Prof. Bernard Slipper, held at University of Pretoria in May 2015.

Seminar on Ethics in Academic Life: A half day seminar held at University of Pretoria in May 2015.

Communicating Research to Non Academic Audience: A 2 hour lecture on how to communicate research to non-academic audience held at University of Pretoria during April 2015.

Workshop on Internet of Things (IoT) & Wireless sensor Networks (WSN): A one day workshop held at Council of Scientific & Industrial Research (CSIR) in Pretoria South Africa on March 2015.

MOSAIC2B: A Video/Data/Film sharing in remote areas through mobile Apps. A half day seminar held at University of Pretoria in 2014.

BLITZKRIEG-'09: A one day National level technical symposium on *Ethical Hacking*, organized by the Department of Computer Science and Engineering of St. Joseph College of Engineering and Technology, Pala, Kerala, India, held in 2009.

BLITZKRIEG-'07: A two day National level technical symposium on *Mobile Computing*, organized by the Department of Computer Science and Engineering of St. Joseph College of Engineering and Technology, Pala, Kerala, India held in 2007.

Programming Language Skills

Good background in C, C++, Java, Assembly language Programming (8085), VB.Net.

Technical Skills

Network security

Computer forensic investigation techniques

Knowledge of the legal issues of computer security in UK and India

Thesis and Projects Done

PhD Thesis: Intelligent Home Automation Security System Based On Novel Logical Sensing and Behavior Prediction

The thesis proposes device fingerprinting techniques to successfully identify user devices accessing the home over the internet. The proposed algorithm is an improvement on existing device fingerprinting algorithms and its device identification capability. The work also proposes a novel logical sensing algorithm to identify and distinguish between normal and attack behavior at primary and secondary access points in a home. It also developed logic based defensive strategies against tech savvy intruders.

The work goes on to propose novel behavior prediction security algorithm to identify the legitimacy of the user entering the home in a timely manner based on his behavior inside the home. The work also demonstrates the efficiency, effectiveness and feasibility of the developed algorithm by developing the hardware, testing and implementing them in a home.

Project in Java: (Masters Project)

Non-Intrusive Detection of peer-to-peer traffic

An application developed in java which could detect peer-to-peer traffic by analyzing the packet headers from a P2P client. The application analyzes parameters like source IP address, source port, destination IP address, packet type etc. for a specific time period and determines the presence of P2P traffic. The identification is made by number of connections from each {src. IP, src. Port} pair connected to distinct destination IP.

Personal Details

Date and Place of Birth : April 29 1987, Kottayam, Kerala, India.

Permanent Address : Muthuthavalathil, Poonjar Post Panachippara
Kottayam, Kerala, India
PIN: 686581

Home Phone : +91-4822273008

E-mail : poonjarian@yahoo.com

Mobile India : +91-9539969852

Mobile South Africa : +27-607273413

Languages Known : Fluent in Malayalam and English.
Familiar with Hindi, Tamil and Español.

Reference

<p>Prof. Jubilant J.K Head of the Department, Department of Computer Science and Engineering, Saintgits College of Engineering, Kottukulam Hills, Pathamuttom, P.O, Kottayam. Pin - 686532 Phone: 9447910964 (Mob.), +91-481-2430349, +91-481- 2436169, +91-481-2436170 Email: hodcse@saintgits.org</p>	<p>Prof. Reza Malekian Associate Professor Department of Electrical, Electronic and Computer Engineering University of Pretoria Private bag X20,Hatfield Pretoria 0028,South Africa Tel: (+27 12) 420-4305. Email:reza.malekian@up.ac.za, reza.malekian@ieee.org</p>	<p>Dr Xingang Wang BSc(Hons) PhD MIEEE MIET MCSE Senior Lecturer Department of Computing Faculty of Engineering and Computing Coventry University Priory St. Coventry CV1 5FB Tel: +44 24 7765 8596 Fax: +44 24 7688 8199 Email:Xingang.Wang@coventry.ac.uk</p>
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