

RITU PANDE

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Profile

Technology principal, specializing in applied cryptography, public key infrastructure and security architecture for connected embedded devices. Experience in technically building and mentoring large teams to take a product/service from conceptualization/pre-sales to production.

I am also an independent researcher, collaborating with experts in academia. My research interests include:

- Graph Neural Networks
- Group Convolutions
- Self-Organizing Systems

For more information please refer ritupande.github.io

Research Experience:

- Publications
 - Hierarchical Neural Cellular Automata,
R Pande, D Grattarola
Artificial Life Conference (ALife 2023) | [Paper](#), [Code](#), [Talk](#)
- Projects
 - Adaptive Traffic Signal Control using Deep Reinforcement Learning. [Code](#)
- Skills
 - Tensor Flow, Numpy, Python, Object Oriented Programming
 - Self-organizing systems, Neural Cellular Automata, Deep Learning, Deep Reinforcement Learning, Graph Neural Networks
- Certifications.
 - [Natural Language Processing Specialization](#)
 - [AI for Medicine](#)
 - [Mathematics for Machine Learning](#)
 - [Deep Learning Specialization](#)
 - [Reinforcement Learning Specialization](#)

Professional Experience:

- Employment

Company	Designation	Duration
General Motors	Software Architect, Technology Lead	Oct 2021 – Till date
Capgemini Group/ Altran Group/ Arcent Technologies/ Hughes Software Systems	<ul style="list-style-type: none">○ Director Technology○ Principal Systems Engineer○ Senior Technical Lead○ Technical Lead○ Senior Software Engineer	July 2004 - Oct 2021
Wipro Technologies	Software Engineer	Oct 2002-July 2004
Innodata Information Technologies	System Engineer	Aug 2001 – Sept-2002

- Recent Projects

- **General Motors connected car infotainment (2014- Till Date).**

Lead Security Architect responsible for:

- o Authoring PKI specification for all connected ECUs capturing procurement, renewal and revocation strategy of device end-entity certificates.
- o Authoring Secured Onboard Communication (SecOC) specification for infotainment ECU.
- o Authoring specification for flexible key provisioning for infotainment ECU at plant and assembly.
- o Designing strategy for integration of ECU key store with trusted applications in Qualcomm Trusted Execution Environment.
- o Designing ECU trusted certificate store strategy.
- o Mentoring and training implementation teams on security and applied cryptography fundamentals.
- o Leading end-to-end integration of the security features between connected infotainment ECU and the back-end servers.
- o Threat modelling for attack vectors on connected ECUs.

Lead Power and State Management Architect, responsible for: (2014- Till Date)

- o Authoring specification for power and state management for infotainment ECU
- o Technically leading implementation teams within General Motors and Tier-I suppliers to implement the power and state management functionality across SoC and Vehicle Interface Processor in infotainment ECU.
- o Spearhead triaging and execution

- **Nokia Siemens Network(NSN) Femto Access Point (FAP) (2013- 2014)**

Project Technical lead for the design and execution of security solution in FAP device.

- o Designing the Trusted Execution Environment strategy in FAP using ARM Trustzone architecture.
- o Technically leading the porting and integration of Aricent developed LTE stacks on SoC vendor's (Broadcom) BSP.
- o Designing and leading execution of integration and optimization strategy of ciphering at LTE air interface with SoC provided HW accelerators.
- o Leading the integration of encryption in the IPSec layer of Linux kernel with SoC provided HW accelerators.
- o Technically leading the design and execution of integration of Strongswan Internet Key Exchange version 2 (IKEv2) stack on Linux operating system with FAP fast path.
- o Designing and leading execution of secure boot strategy for FAP
- o Leading the execution of strategy for secure over-the-air download and subsequent flashing of firmware.
- o Designing the IP filter rules for implementing NATing in the FAP device.

- **Nokia Siemens Network (NSN) Flexi-Edge Base Transceiver Station (BTS) (2009-2013)**

Feature Lead for design and execution of security and transport solutions for the base station

- o Technically leading the design and execution of integration of Strongswan Internet Key Exchange version 2 (IKEv2) stack on QNX operating system with fast path executed in network processor.
- o Technically leading the architecture, design and execution of CLM strategy for procurement, renewal and revocation of device end-entity certificates in the BTS

- Skills
 - Security architecture for embedded devices, Applied Cryptography, Public Key Infrastructure, Platform Security, Transport Layer Security, Android Security, Trusted Execution Environment, Secure Programming, Secured Onboard Communication.
 - Automotive Network Architecture, Vehicle Power Management, IP Transport, L2/L3 Switching
 - Creating technical proposals detailing solutions to customer requirements and effectively presenting them.
 - Programming Languages: C, object-oriented Python
 - Tools: Jira, Github, Enterprise Architect
 - Operation Systems: Linux, QNX
 - Standards: X.509, IKEv2, IPsec, TLSv2, SHE, TrustZone
 - Excellent verbal and oral communication skills

Leadership Experience:

- Experience in leading technical task force across multiple tier-1 suppliers and OEM teams to bring product features to fruition from their concept inception to deployment.
- Extensive experience in technically building and mentoring large teams (largest team size being 45) in the area of IP transport, security and layer 2 switching and routing strategies.
- Deft at providing technical leadership across parallel projects, resolving interface issues across multiple subsystems.

Teaching Experience:

- Aricent Technologies: Organizational trainer for 'Debugging Skills'.
- General Motors: Organizational trainer for 'Security and Applied Cryptography Fundamentals'.

Educational Qualifications:

Bachelor of Information Tech. (1997-2001) Indraprastha College, Delhi University, India.

Awards and Achievements:

- 1 Certificate of Merit in National Mathematics Olympiad competition, 1995
- 2 Individual Employee Excellence award, Altran Group, 2008

Extra-Curricular Achievements:

1. 1st Degree Black Belt holder in ITF Tae-kwon-do
2. 1 Gold and 1 Silver in South Asian Tae-kwon-do Championships (ITF), Dec 2008
3. 2 Gold and 1 Silver in National Tae-kwon-do Championships, Dec 2006
4. Completed Airtel Delhi Half Marathon ' 09 and '10

I hereby agree that the above information is true to the best of my knowledge and belief.

Ritu Pande