

MHRD Scheme on Global Initiative for Academic Network (GIAN)

ADVANCE LEVEL COURSE

ON


“INTRODUCTION TO SOFTWARE DEFINED NETWORKING”

Overview

Software-Defined Networking (SDN) and Network Function Virtualization (NFV) are disruptive technologies that are creating a paradigm shift in the way next generation communication networks are designed and operated. Traditional networks use vertically integrated network elements (switches, routers etc.) wherein the control-plane and forwarding-plane resides on the network element itself. Network functions such as firewall, encryption, domain name service (DNS), network address translation (NAT) etc. are typically carried out using proprietary, dedicated hardware. These characteristics make the current networks too complex to manage, change and scale to the requirements of today’s environments. SDN/NFV provides a software-centric approach to address the weaknesses of the current networks. SDN architecture uses a highly scalable, centralized and programmable control plane that controls a distributed forwarding plane. NFV architecture involves implementing the network functions in software as virtualized network functions (VNFs) that can run on general purpose hardware. SDN and NFV independent but complementary technologies, that together can be used to realize ancient, agile, and scalable networks. As SDN/NFV moves from hype and skepticism phase to analysis and adoption phase, it is important for current and future network engineers to understand the potential and challenges that come with these technologies.

The proposed course deals with software defined radio and analysis, and it is at an advanced level. It teaches theoretical aspects but also highlights successful applications of it in various areas of engineering. Moreover, it includes sessions for those participants who may not have a strong background in the field. The purpose of the 5 days’ advance level course is to provide an intensive understanding of basic idea behind it and its working, and to equip the participants with software tools for solving the practical problems. The main objective of this course is to make Good understanding of challenges of current communication networks and motivation for SDN/NFV, Knowledge of SDN/NFV concepts and reference architectures, Basic hands-on experience and understanding of how Open Flow works and finally Exposure to practical SDN/NFV applications.

Module	Duration: 26-3-2018 to 30-3-2018		
	Maximum number of participants for the course = 50		
Day 1 (26.3.2018)	Lecture 1	Lecture 1 (1hr): Motivation for SDN/NFV Traditional networks, vendor lock-in, control plane and forwarding plane separation, network functions, benefits and challenges of SDN/NFV	1 Hour
	Lecture 2	SDN concepts Drivers, reference architecture,SDNvia APIs,SDNvia Overlays, standards	1 Hour
	Practical 1	Work on a short (2-page) paper on a topic from a specified list of SDN/NFV topics paper submission due at the end of the course	2 Hour
Day 2 (27.3.2018)	Lecture 3	OpenFlow components controller/switch, protocol, flow tables, flow processing, instructions and actions	1 Hour
	Lecture 4	Open SDN controllers Open Daylight (ODL), and Open Network Operating System (ONOS)	1 Hour
	Practical 2	OpenFlow hands-on exercise using Mininet Part 1	2 Hour
Day 3 (28.3.2018)	Lecture 5	NFV concepts Virtualization, VNFs, service function chaining (SFC), NFV infrastructure (NFVI), orchestration, deployment models	1 Hour
	Lecture 6	NFV reference architectures ETSI NFV framework, MEF LSO architecture	1 Hour
	Practical 3	OpenFlow hands-on exercise using Mininet Part 2	2 Hour
Day 4 (29.3.2018)	Lecture 7	Central O_ce Re-architected as Datacenter (CORD) architecture	2 Hour
	Lecture 8	SDN/NFV use cases vCPE, vEPC, vIMS, SD-WAN	

	Practical 4	Watch and discuss NFVI demo video	2 Hour
Day 5 (30.3.2018)	Lecture 9	Real-world application Google B4 project	1 Hour
Date of Examination:	MCQ Type Test	30th March, 2018	1 Hour
Who can attend	<ul style="list-style-type: none"> • Executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories. • Students at all levels (B.Tech/MSc/M.Tech/Ph.D) or Faculty from reputed academic institutions and technical institutions. 		
Registration process and Fee	<ul style="list-style-type: none"> • The applicant is required to get themselves register on GIAN web portal (http://www.gian.iitkgp.ac.in) to apply for any number of GIAN courses as and when necessary. • The course registration fee is separate. The participation fees (Demand draft drawn in favour of Director, NITK Surathkal, payable at Surathkal for taking the course is as follows: <ul style="list-style-type: none"> ▪ Participants from abroad : US \$500 ▪ Industry/ Research Organizations: Rs 8000 ▪ Faculty Members from Academic Institutes: Rs 5000 ▪ Students/Research Scholars: Rs 2500 • The above fee include all instructional materials, computer use for Practical and Assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation, if available, on payment basis. 		
	<p>Foreign faculty: PRADEEP K KONDAMURI Pradeep K Kondamuri obtained his PhD in Electrical Engineering, University of Kansas, Lawrence, 2005 in Communications Systems and Networking. He received Master of Science, Electrical Engineering, University of Kansas, Lawrence, KS in 2002 in Wireless and Optical Communications area. He obtains Graduate Teaching Assistant position in EECS Department, University of Kansas, USA Aug 2003 – May 2005. He worked as a Research Scientist III, Sprint / Clearwire, Burlingame, CA, USA April 2005-June 2010 As a Subject matter expert (SME) participated in 4G WiMAX trials, Ethernet over Powerline field trial, and 40G fiber optic field trial; also, responsible for gathering, filtering and analyzing various performance metrics and planning, executing and managing optimization projects; improved the market call drop rate by 12% through neighbor list optimization project; improved the call drop rate by additional 5% through PN retune project. He served as a Senior Systems Engineer, FiberTower Corp., San Francisco, CA, USA June 2010-May 2012 Technical lead and a key contributor to carrier-grade native Ethernet backhaul network deployment, validating LTE/WiMAX/3G backhaul network architectures. From May 2012 till now he is working as a Senior Product Architect, Packet Software & Access, Ciena Corp., San Jose, CA, USA. Highly motivated, seasoned professional with 12 years of work experience in wireless/wireline networking industry following a doctorate degree from a reputed university. Strong technical background with expertise in a wide variety of technologies, standards, and product Applications. Proven success in leading a variety of technical projects from conception to completion, IEEE Senior Member 2011. He is an Active contributing member and Co-Editor, MEF Forum, Open Networking Foundation (ONF) Certified SDN Engineer (OCSE#SDNE50003) 2016, 8 technical publications with 100+ citations, 5 conference presentations, 2 issued patents, Excellent verbal and written communication skills. Procured 2 patents in his area of research US Patent No 7,974,205 - “Method and system for the distribution of Internet Protocol traffic in a communication system” – Granted July 2011 and US Patent No 8,060,154 - “Conserving power on a mobile device” – Granted Nov 2011</p>		



Host Faculty

Pathipati Srihari (M'03-SM'10) received B.Tech, Electronics and Communication Engineering from Sri Venkateswara University and completed masters degree in Communications Engineering and Signal Processing from University of Plymouth, England, UK. He obtained Ph.D from Andhra University in the field of radar signal processing in 2012. He is currently working as an Assistant Professor at National Institute of Technology Karnataka, Surathkal. He worked as a visiting Assistant Professor at McMaster University, Canada in 2014. He received 2010 IEEE Asia Pacific Outstanding Branch Counselor Award. He is a Senior

Member of IEEE and a Senior Member of ACM. He is a Fellow of IETE and a member of IEICE, Japan. He received young scientist award from the department of science and technology (DST), New Delhi to carryout sponsored research project entitled Development of efficient target tracking algorithms in the presence of ECM. His research interests are radar target tracking, radar waveform design and efficient DSP algorithms.

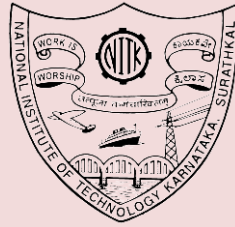


PRASHANTHA KUMAR H obtained his **PhD** in Electrical and Communication Engineering, National Institute of Technology, Karnataka, 2012 in Decoding Algorithms for Linear Block Codes, Wireless and Data Storage Systems. He received **Master in Technology** in Digital Electronics and Communication from MIT Manipal during 1999-2001. He joined Temporary Lecturer for **six months** (July 2011 to Dec. 2011) in E&C Engineering at NITK Surathkal. Served as Lecturer for 5 years from Sep. 2001 to Aug. 2006, Senior Lecturer from Sep. 2006 to July 2007, Assistant Professor for 6 months in E&C Department at MIT Manipal. Since 2013, he serve as an assistant professor in National Institute of Technology Karnataka, Surathkal. He is subject

expert in Error Control Coding, Wireless Communication, Signal Processing for Communication and RF Microelectronics. He is an author of MATLAB/Simulink for Digital Signal Processing, with Prof. Won Y Yang. ISBN: 978-89-7283-9989. Hongrung Publishing Company, Seoul, Korea.

**Advance Level Course
On
“INTRODUCTION TO SOFTWARE DEFINED NETWORKING”**

Organized by



**Department of Electronics & Communication Engineering,
National Institute of Technology Karnataka, Surathkal**

Supported by



GIAN

**(Global Initiative for Academic Networks)
MHRD, GOVT. OF INDIA**

Duration: 26-3-2018 to 30-3-2018

Venue: NITK Surathkal, Mangaluru

**Last Date for sending filled registration form along with DD: 5-3-2018
No registration fee for NITK Faculty/ Full Time Ph.D./M.Tech./B.Tech. student**

Contact Address:

Dr. Pathipati Srihari

Course Coordinator

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National Institute of Technology Karnataka, Surathkal
MHRD Scheme on Global Initiative for Academic Networks (GIAN)

Advance Level Course
On
“Remote Sensing Image Processing and Analysis”

Duration: 26-3-2018 to 30-3-2018

Registration Form

1. Name of applicant:-----

2. Designation & Department:-----

3. Mailing Address: -----

4. Tel: (Réidence):-----

(Mobile):-----

(Office): -----

5. Email:-----

6. Qualification:-----

7. Experience: Teaching:-----

and Industrial:-----

8. Comment on your exposure: -----

9. Fee Payment Details

Amount Rs: -----Demand Draft No. : -----

Bank: -----and Date: -----

10. Category of participants:

Faculty/Student/Research scholar of NITK

Faculty/Student/Research scholar of Outside NITK

Industry/Research Organizations

11. Require accommodation Facility? : Yes / No

I agree to abide by the rules and the regulations governing the GIAN–MHRD Course and I will attend the course for entire duration.

Place:

Date:

Signature of the applicant

Note:1. Filled registration form with Demand Draft should be send to the course coordinator.
2. Demand draft drawn in favour of Director, NITK Surathkal, payable at Surathkal