Hardik Soni

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Date of birth 04 May 1987 | Nationality Indian

RESEARCH INTERESTS

My primary areas of interest are systems and networking. The current focus is on programmable networks to allow multiple stack-holders, including service providers, device vendors, and end-users, to manage and networks in a coordinated way. To that end, I work on enabling compositional and modular approaches to program networks.

EDUCATION

Sep.2014 – Apr.2018 **DOCTORAT en INFORMATIQUE**
Ph.D. Thesis — Towards network softwarization : a modular approach for network control delegation
Sep.2013 – Aug.2014 — Master Informatique Fondements et Ingénierie
Sophia Antipolis, France — Inria Sophia Antipolis - Méditerranée
Nice, France — Universite Côte d'Azur. CGPA: 14.59/20

Jun.2009 – May.2011 **Master of Technology in Computer Science & Engineering**
Chennai, India — Indian Institute of Technology, Madras. CGPA: 9.18/10
M.Tech Thesis — Classification of Execution Intervals of Program/Input pair using cache miss and Discrete Hidden Markov Model (DHMM)

Jun.2004 – May.2008 **Bachelor of Engineering**
Nadiad, India — Dharmsinh Desai Institute of Technology. Score: 62.62 %

RESEARCH EXPERIENCE

Jan.2021 – Present **Senior Researcher**
Heidelberg, Germany — NEC Laboratories Europe GmbH

Aug.2018 – Nov.2020 **Postdoctoral Research Associate**
Ithaca, New York, USA — Cornell University

PUBLICATIONS AND REPORTS

SIGCOMM 2020 [pdf]
Hardik Soni, Myriana Rifai, Praveen Kumar, Ryan Doenges, and Nate Foster. *Composing Dataplane programs with $\mu P4$.* In Proceedings of the Annual conference of the ACM Special Interest Group on Data Communication on the applications, technologies, architectures, and protocols for computer communication (SIGCOMM '20)

Universite Côte d'Azur 2018 [pdf]
Ph.D Thesis: *Towards network softwarization : a modular approach for network control delegation.*

Archive ouverte HAL 2018 [pdf]
Hardik Soni, Thierry Turletti, and Walid Dabbous. *P4Bricks: Enabling multiprocessing using Linker-based network data plane architecture.* HAL-INRIA Open Archive, February, 2018

IEEE TNSM 2017 [pdf]
Hardik Soni, Walid Dabbous, Thierry Turletti, and Hitoshi Asaeda. *NFV-based Scalable Guaranteed-Bandwidth Multicast Service for Software Defined ISP networks.* IEEE Transactions on Network And Service Management (TNSM) Special Issue On Advances In Management Of Softwarized Networks, Dec 2017

IEEE ICC 2017 [pdf]
H. Soni, W. Dabbous, T. Turletti, and H. Asaeda. *Scalable Guaranteed-Bandwidth Multicast Service in Software Defined ISP networks.* 2017 IEEE International Conference on Communications (ICC), Paris, 2017, pp. 1-7, doi: 10.1109/ICC.2017.7996652.

IEEE NFV-SDN 2015 [pdf
H. Soni, D. Saucez and T. Turletti. *DiG: Data-centers in the Grid.* 2015 IEEE Conference on Network Function Virtualization and Software Defined Network (NFV-SDN), San Francisco, CA, USA, 2015, pp. 4-6, doi: 10.1109/NFV-SDN.2015.7387391.

ACM MSWiM 2014 [pdf]
Emilio P. Mancini, Hardik Soni, Thierry Turletti, Walid Dabbous, and Hajime Tazaki. *Demo abstract: realistic evaluation of kernel protocols and software defined wireless networks with DCE/ns-3.* In Proceedings of the 17th ACM international conference on Modeling, analysis and simulation of wireless and mobile systems (MSWiM '14).

IIT Madras 2011 [pdf]
M.Tech Thesis: *Classification of Execution Intervals of Program/Input pair using cache miss and Discrete Hidden Markov Model (DHMM)*

WORK EXPERIENCE

Jun.2011 – Sep.2013
Senior Software Engineer, Alcatel-Lucent India
Bangalore, India

Statistics Collector for High Performance Network Equipment (LTE HeNB Gateway
- Designed and developed a module to periodically generate statistics and report them to other operational processes in the presence of 128K+ parallel call.

Load Balancer for SCTP Connections towards Evolved Packet Core(EPC) and E-UTRAN
- One process establishes SCTP connections towards femto cells in E-UTRAN. The other process handles the SCTP connections towards EPC. It connects to available peer core network elements and shares the socket descriptor to other CP processes.

Network Media Processing Platform from Bell Labs - (Yangtze 9980)
- Worked as developer and tester for a programming framework on top of Windows Communication Foundation and Windows Workflow Foundation and Runtime Environment.

Jun.2008 – Jul.2009
Software Engineer, Cybage Software
Gandhinagar, Gujarat, India
- worked as a developer and tester for a programming framework on top of Windows Communication Foundation, Windows Workflow Foundation, and Runtime Environment.
- Programmers can rapidly create and maintain user definable workflow applications that capture and automate business processes using this framework.

SCIENTIFIC SERVICES

2022 TPC Member ACM SOSR 2022

2021 IEEE Transactions on Network and Service Management

2021 ACM CoNEXT 2021 Artifact Evaluation Committee

2020 ACM SIGCOMM 2020 Artifact Evaluation Committee

OTHER SKILLS

Organisational Managerial skills
- Participated in "Postdoc Leadership Development Program" of Cornell University

TEACHING

Aug.2010 – Nov.2010 TA for Mathematical Concepts of Computer Science at CSE Dept, IITM.
Course Advisor : Dr. Kamala Krithivasan

Aug.2009 – Apr.2010 TA for Computational Engineering at CSE Dept, IITM.
Award Outstanding Teaching Assistant
Course Advisor : Dr. B. Ravindran

ACADEMIC COURSES & TECHNICAL SKILLS

Currently, I work at an intersection of Network Systems, Compilers and Programming Languages. However, my academic journey covers a broad spectrum of courses covering the breadth of computer science and engineering skills.

Master IFI, 2014
Universite Côte d'Azur

- Evolving Internet - Architectural Challenges
- Algorithms for Telecommunications
- Performance Evolution of Networks
- Compute and Data Cloud
- Distributed Systems

M. Tech, 2011
IITM, Chennai

- Parallel Computer Architecture
- Advanced Data Structures and Algorithms
- Mathematical Concepts for Computer Science
- Artificial Intelligence
- Pattern Recognition
- Artificial Neural Network

Programming Languages
C, C++, Python, Java, P4 etc.. any language as required

Tools
Fedora Preferred OS platforms: Ubuntu or Fedora;
Debugging: Gdb; VC: Git; Editor: Vim
I adapt to tools, editors and programming languages according as required.

PERSONAL INTERESTS

- I enjoy traveling, hiking during summers, skiing, and running during winters. I listen and dance on notes of swing music. I aspire to learn music theory and piano.