DLT Planning and Itinerary

Since one of my current Ph.D. students is from Thailand and has connections with some universities, I was invited to give this DLT (Distinguished Lecture Tour) in Bangkok, Thailand on April 19-24. I visited Kasetsart University (KU), Thammasat University (TU), and Siam Institute of Technology (SIT). The talks in KU are on general research discussion and “Software Defined Networking: The 2nd Wave of Cloud Computing,” hosted by Prof. Anan Phonphoem. The talk in TU is on “Sharing Experiences on International Academic Services and Research,” hosted by Prof. Rachada Kongkachandra and Prof. Peerasak Paoprasert. There was no formal talk arranged in SIT, but just a panel discussion on how an institute of technology could evolve itself by splitting and merging different programs. The visit was hosted by Dean/Prof. Thakrit Panklib. The itinerary is as follows.

4/19 (Sun) departure from Taipei arriving Bangkok at 11:10AM
4/20 (Mon) Host: Prof. Anan Phonphoem, Kasetsart University (anan.p@ku.ac.th)
   Topic 1: Research Discussion
   Time/Place: 2:00-3:00PM, 404 Building 15, Kasetsart University
   Topic 2: Software Defined Networking: The 2nd Wave of Cloud Computing
   Time/Place: 3:00-4:30PM, 203 Building 15, Kasetsart University
4/21 (Tue) Host: Prof. Yaowadee Temtanapat, Thammasat University (yao@cs.tu.ac.th)
   Topic: Sharing Experiences on International Academic Services and Research
   Time/Place: 10:10AM-12NN, Meeting Room 1, Bor Ror 2 Bldg, Thammasat University
4/22 (Wed) Host: Dean/Prof. Thakrit Panklib, Siam Institute of Technology
   Time: 10:00-11:30AM
   12:00NN Bangkok -> Pataya
4/24 (Fri) Pataya -> Bangkok -> Taipei

Three Lectures and Q&A

The first talk at KU was a panel on research directions and capacity. I shared some recent trends in networking and communications, including big trends in software defined networking (SDN), network function virtualization (NFV), small cells in heterogeneous networks (HetNet) for 5G, and Internet of things or wearables with cloud support. Then we discussed the research capacity problem in their MS program and Ph.D. program. Because the top undergraduates either go abroad for graduate study or join the industry directly, plus the relatively small
research funding, the research capacity is limited. We discussed ways to improve this before the research funding could be enlarged. Collaboration domestically and internationally could be one possible way. Instead of just sending students abroad for their graduate study, strong research programs could be “homegrown” with mutual and external collaboration. The second talk at KU was on “Software Defined Networking: The 2nd Wave of Cloud Computing.” I try to put SDN and NFV under the umbrella of “cloudization” where the 1st wave has centralized and virtualized servers and the 2nd wave would do the same to networks. It would be much easier to understand the role of SDN and NFV if put in the cloudization trend. I also compared the app store in SDN/NFV and the one in smartphone eco-system. The audience were excited by the likely big changes to the networking industry. Most questions were on how big and how fast the changes would happen, and how operators could adopt the SDN solutions.

My talk at TU was a generic one on “Sharing Experiences on International Academic Services and Research.” I shared my 7-year experiences of international academic services including journal editorships, special issue guest editorships, conference program committees, technical committees under IEEE ComSoc, and IEEE Distinguished Lecturer. I argued why and how I have been doing these. In the 2nd part, I talked about my 21-year experiences of research. I compared the differences between success criteria and impact criteria, industry research and academic research, as well as independent work and collaborative work. I illustrated how to manage research activities more efficiently, including how to graduate students in time and how to campaign for IEEE Fellow. The feedback from the audience was quite positive, with comments like “it inspired my career plan” and “now I know what I should do in the next decade.” Most questions were on how to volunteer oneself for international academic services, how to handle the paper review process, how to choose problem statements with better impact, and how to facilitate remote collaboration.
IEEE ComSoc Distinguished Lecture

Talk Title:
**Software Defined Networking: The 2\textsuperscript{nd} Wave of Cloud Computing**

Speaker:
Ying-Dar Lin, IEEE Fellow, IEEE Distinguished Lecturer, ONF Research Associate
Distinguished Professor of National Chiao Tung University, Hsinchu, Taiwan

Time/Place:
3:00-4:30PM 4/20 (Mon), 203 Building 15, Kasetsart University

Host:
Abstract:
The first wave of cloud computing was to centralize and virtualize servers into the clouds, with a phenomenal result. The emerging second wave, named Software Defined Networking (SDN), is to centralize and virtualize networking, especially its control, into the clouds. SDN deployment started from data centers and now expands to the model of “networking as a service” (NaaS) offered by the operators to enterprise and residential subscribers. By centralizing the control-plane software of routers and switches to the controller, and its applications, and controlling the data-plane of these devices remotely, SDN reduces the capital expenditure (CAPEX) and operational expenditure (OPEX) because the devices become simpler and hence cheaper and number of administrators could be reduced. SDN also enables fast service orchestration because the data plane is highly programmable from the remote control plane at controllers and applications. However, as we detach control plane from where data plane resides, new protocols shall be introduced between control plane and data plane, as the southbound API between controllers and devices and the northbound API between controllers and applications. As we further extend the control plane from controllers to applications such as Service Chaining (SC) and data plane from devices to Network Function Virtualization (NFV), newer mechanisms and APIs need to be added to these APIs. We argue why, when, and where SDN would prevail, and then illustrate how to make it happen. We shall introduce the key technology components, including OpenFlow, SC, NFV, and Network Service Header (NSH) and then review the issues on standardization, development, deployment, and research. At the end, the development and deployment experiences of a campus SDN solution for Wi-Fi/switch control and management are shared.

Autobiography:
YING-DAR LIN is a Distinguished Professor of Computer Science at National Chiao Tung University (NCTU) in Taiwan. He received his Ph.D. in Computer Science from UCLA in 1993. He served as the CEO of Telecom Technology Center during 2010-2011 and a visiting scholar at Cisco Systems in San Jose during 2007–2008. Since 2002, he has been the founder and director of Network Benchmarking Lab (NBL, www.nbl.org.tw), which reviews network products with real traffic. NBL recently became an approved test lab of the Open Networking Foundation (ONF). He also cofounded L7 Networks Inc. in 2002, which was later acquired by D-Link Corp. His research interests include design, analysis, implementation, and benchmarking of network protocols and algorithms, quality of services, network security, deep packet inspection, wireless communications, embedded hardware/software co-design, and recently software defined networking. His work on “multi-hop cellular” was the first along this line, and has been cited over 650 times and standardized into IEEE 802.11s, IEEE 802.15.5,

**IEEE ComSoc Distinguished Lecture**

**Talk Title:**

**Sharing Experiences on International Academic Services and Research**

**Speaker:**

Ying-Dar Lin, IEEE Fellow, IEEE Distinguished Lecturer, ONF Research Associate

Distinguished Professor of National Chiao Tung University, Hsinchu, Taiwan

**Time/Place:**

10:10AM-12NN, 4/21 (Tue), Meeting Room 1, Bor Ror 2 Bldg, Thammasat University

**Host:**

Prof. Yaowadee Temtanapat, Thammasat University (yao@cs.tu.ac.th)

**Abstract:**

Just like doing campus academic services on top on teaching and research obligations, a researcher could volunteer to international academic services after years of research, which gains one visibility and opportunities to co-work in all dimensions with other researchers. These services and co-work experiences could in-turn inspire and elevate one’s future research. But they were seldom discussed publicly in the society. In this talk, based on my 22 years of research and 7 years of international academic services, I’d share my personal humble viewpoints on why, what, when, and how of international academic services and research. The 1st part of the talk reviews incentives and logistics behind serving journal editorial boards, special issues, conference program committees, society technical committees, and other positions. Whether waiting to be invited or to volunteer oneself is compared. The 2nd part first compares research (big R or small r) and development (big D or small d), in academic (with Rd) and industry (with rD), to inspect their motivation. Then I compare the “criteria of survival”
and “impacts of lifetime”, where the former and the latter are like basketball games and football games, respectively. In the long run, research should be campaigned as a football game instead of a basketball game. Next I share some logistics on (1) evolving independent work model to co-work model, (2) managing research processes from proposals to publications, (3) how to graduate your students on time, and (4) how to campaign for IEEE Fellow. At the end, I list lessons and skills I’ve learned so far and those yet to be learned by me.

Outline:

Part I: Experiences on international academic services
  Why: from visibility to partnership
  What: from editorial board, special issue, program committee, technical committee, to distinguished lecturer
  When: too junior vs. too senior
  How: invited vs. voluntary

Part II: Experiences on academic research
  Why: academia vs. industry
  What: criteria vs. impacts
  When: independent vs. co-work
  How: from proposal to publication
      How to graduate your students on time
      How to campaign for IEEE Fellow

Conclusions
  Lessons learned
  Skills learned and more to learn

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YING-DAR LIN is a Distinguished Professor of Computer Science at National Chiao Tung University (NCTU) in Taiwan. He received his Ph.D. in Computer Science from UCLA in 1993. He served as the CEO of Telecom Technology Center during 2010-2011 and a visiting scholar at Cisco Systems in San Jose during 2007–2008. Since 2002, he has been the founder and director of Network Benchmarking Lab (NBL, www.nbl.org.tw), which reviews network products with real traffic. NBL recently became an approved test lab of the Open Networking Foundation (ONF). He also cofounded L7 Networks Inc. in 2002, which was later acquired by D-Link Corp. His research interests include design, analysis, implementation, and benchmarking of network protocols and algorithms, quality of services, network security, deep packet inspection, wireless communications, embedded hardware/software co-design, and recently software defined networking. His work on “multi-hop cellular” was the first along this line, and has been cited over 650 times and standardized into IEEE 802.11s, IEEE 802.15.5,
WiMAX IEEE 802.16j, and 3GPP LTE-Advanced. He is an IEEE Fellow (class of 2013), an IEEE Distinguished Lecturer (2014&2015), and a Research Associate of ONF. He is currently on the Editorial Boards of *IEEE Transactions on Computers*, *IEEE Computer (Associate Editor-in-Chief)*, *IEEE Network*, *IEEE Communications Magazine - Network Testing Series*, *IEEE Wireless Communications*, *IEEE Communications Surveys and Tutorials*, *IEEE Communications Letters*, *Computer Communications*, *Computer Networks*, *Journal of Network and Computer Applications*, and *IEICE Transactions on Information and Systems*. He has guest edited several Special Issues in IEEE journals and magazines, and co-chaired symposia at IEEE Globecom’13 and IEEE ICC’15. He published a textbook, *Computer Networks: An Open Source Approach (www.mhhe.com/lin)*, with Ren-Hung Hwang and Fred Baker (McGraw-Hill, 2011). It is the first text that interleaves open source implementation examples with protocol design descriptions to bridge the gap between design and implementation.