Highlights from IEEE HPSR 2016: 17th International Conference on High Performance Switching and Routing

Naoaki Yamanaka, General Co-Chair, Keio University, Japan
Eiji Oki, TPC Co-Chair, The University of Electro-Communications, Tokyo, Japan

HPSR 2016, IEEE 17th International Conference on High Performance Switching and Routing was held at Keio University, Yokohama, Japan, on 14-17 June, 2016. The conference was sponsored by the IEICE Communications Society and the IEEE Communications Society, and was co-located with 12th International Conference on IP-Optical Network (iPOP) which is one of the largest conferences & exhibitions about Optical or IP backbone networks. The conference was supported by IEICE Photonics Network Technical Committee, National Institute of Information and Communications Technology, Japan, Support Center for Advanced Telecommunications Technology Research Foundation, Japan, and Yokohama Convention & Visitors Bureau, Japan.

The conference addresses numerous challenges of today’s data networks, which are being subject to significant changes driven by new network applications, such as cloud computing, Internet of things and other new concepts. As a result, new technologies are needed to efficiently and effectively cope with the increasing of traffic demands. This conference brought together researchers from around the world to present the latest advances in the fields of high-performance networks. The participants discussed switching and routing capabilities that ought to be more intelligent, efficient, reliable and more application coordinating than ever before.

The statistical information of the program is a rich technical program comprising of 31 excellent technical full-paper presentations and eight poster-paper presentations, three keynote speeches, one invited speech, four tutorials, technical tours, and workshop presentations. The number of participants of the conference was 101 which consist of academia 69, industry 26, government 4, and others.

Papers submitted from 26 countries, including Asia, North America, and Europe. The submitted papers were carefully peer-reviewed by our Technical Program Committee (TPC). Each paper received at least three reviews, thus hopefully providing valuable feedback to the authors and ensuring high confidence in the outcome of the review process. For each track, the accepted papers were selected based on all the review results including reviewers’ comments.

On Tuesday, three tutorials were offered. Prof. Abbas Jamalipour, as shown in Fig. 1 (University of Sydney, Australia) talked on scaling dense-traffic cellular networks through software defined networking. Prof. Noriaki Kamiyama (Osaka University & NTT Network Technology Laboratories, Japan) delivered a tutorial on advances in reducing Web response time. Dr. Dimitri Papadimitriou (Nokia - Bell Labs, Belgium) reviewed a number of open challenges in network optimization. Note that each tutorial had about 70-80 attendees, which is a larger number than our expecting and the attendees enjoyed the lecture of each session.

On Wednesday afternoon, we had two keynotes in the HPSR and iPOP joint plenary session, as shown in Fig. 2. Before the two keynotes, a piano concert was held. Rutsuko Yamagishi (Fig. 3), renowned Pianist, played F. Liszt and S. Rachmaninov on the piano at Fujiwara Memorial Hall, which is well decorated, at Keio University. Prof. Ken-ichi Sato (Nagoya University, Japan) gave a keynote on how optical technologies are expected to help mitigate the adverse effects of the imminent demise of Moore’s Law. He also presented energy saving technology in data center networks. Prof. Tarik Taleb (Aalto University, Finland) presented a keynote on network softwarisation toward 5G that is one of the hottest topics in EU.
perspectives towards Information-driven networks.

As a part of the IEEE HPSR 2016 Conference, several technical tours, such as Keio K2 Campus tour for visiting advanced science and technical labs and Keio DMC tour for emphasizing research on digital media and content, were held at Keio University, Yokohama, Japan. We participated the Keio K2 Campus tour, which was started at 3:30 pm on 14th Jun, 2016 from Raiosha, Keio University, Hiyoshi Campus. The tour was covered with three lab visits and technical demonstrations, which are haptics and artificial technology for 21st century, photonics polymer project, and elastic lambda aggregation network. We first visited the haptics and artificial technology lab including real demonstration, as shown Fig. 5. The professor and PhD students demonstrated how their innovations can support medical technology.

The next lab visit was intended for the photonics polymer project. Prof. Yasuhiro Koike demonstrated a variety of their innovations, including world-leading graded index plastic optical fiber, highly scattered optical-transmission polymers, zero-birefringence polymers, and super-birefringent films. Utilizing these core technologies that are based on the essential principles of light, the Keio Photonics Research Institute (KPRI) has been exploring possible applications of polymers in the field of photonics by elucidating their fundamental mechanisms, in an attempt to discover new functions. These technologies are not only a pure research stage, but also products by startup company. Thereafter, we moved to an elastic lambda aggregation network lab, which is one of the largest optical network consortium type joint research projects in Japan, collaborated with NTT, KDDI, Hitachi, Oki, Furukawa, and Keio University. The lab members demonstrated us regarding the future optical metro-access integrated network that can reallocate physical resources using scalable-elastic and route-selective optical paths. The entire tour was enjoyable and we learned new technologies.

The other lab tour was Digital media and content (DMC) tour. DMC is designed by researchers from Keio University for the purpose of research on media and content. It also provides testing services based on the digital cinema system specification by Digital Cinema Initiatives (DCI), a joint venture of Hollywood
studios. Prof. Kunitake Kaneko was this tour guide. Participants had an experience of the same content of testing movie but taken in different environments. Moreover, the participants experienced a sample 3D movie. The participants were allowed to see the server room of the system. This studio is not only doing the testing but also managing the archive of the media. Apart from the studio, researchers of this lab introduced their works.

After the two tours were finished, 70-over participants joined Get Together Party, which was conducted at Yagami campus, Keio University, as shown in Fig. 6.

![Fig. 6 Get Together Party](image)

Before the conference banquet on Tuesday, the Yokohama walking tour was held, as shown in Fig. 7. The walking tour was about 2 km, walking around the Yokohama bay area. The walking tour started from Minatomirai station and reached Peking Hanten Restaurant, China town, which was the banquet venue, and most of participants joined this walking tour, as shown in Fig. 7.

![Fig. 7 Yokohama walking tour](image)

During the banquet, the conference best paper award was presented to “On-chip Order-Exploiting Routing Table Minimization for a Multicast Supercomputer Network,” authored by Andrew Mundy, Jonathan Heathcote, and Jim D. Garside (University of Manchester, United Kingdom). Andrew Mundy received the award certificate plaque and Japanese traditional hatti coat from Prof. Eiji Oki, TPC Co-chair, as shown in Fig. 8. The best paper was selected by HPSR 2016 Award Committee based on all the review results, including reviewers’ comments and reviews by the Committee.

Prof. Matathi Veeraraghavan and Prof. Weiqiang Sun, TPC Co-Chairs of HPSR 2017, announced that the next HPSR would be held in Campos do Jordão, Brazil, on 27-30 June, 2017. More information can be found at [http://www.ieee-hpsr.org/](http://www.ieee-hpsr.org/). We are looking forward to seeing you at Brazil.