of the IoT through "Hacking My House." He further discussed 1) traditional relationships, which are defined by wires and networks; 2) his experience with HTML5, WebSockets, and servers; 3) IP, Wi-Fi, and generic connectivity; 4) discovery; and 5) the #APIFirst approach. He concluded with some longer-term issues like privacy and big data.

Tom Coughlin supplied the final keynote on "Digital Storage and Security in the Consumer Internet of Things." He argued that because physical things are becoming smarter and connected, they can provide important

services as well as be exploited to gain access to our personal data. Thus, it is high time to look into where and how IoT data are stored and analyzed. Sharing of the high-level abstraction generated by IoT data processing should be regulated to protect consumer privacy. The concern with the privacy of data automatically led us to local data processing and storage. Sharing the data can be done after proper anonymization.

I gave the final tutorial on how MEC could offer consumer-centric IoT services. As an example, I highlighted

use cases related to connected vehicles and explained how MEC will enable such use cases. The final items on the program were two demonstrations: 1) Lightweight M2M Gateway Running on a Raspberry Pi and 2) Cars as Connected Objects. After that, Thinagaran provided concluding remarks at the closing ceremony.

I'd like to share some future plans on the workshop. Our vision is to turn it into a premier annual workshop on the IoT. CCIoT will meet every year, and this year's success will provide a boost for years to come.

Reporting from IEEE GCCE 2015

The special sessions from the IEEE Consumer Electronics (CE) Society Future Directions on the Internet of Things (FD-IoT) team moved from Madrid, Spain (IEEE ISCE 2015), to Osaka, Japan, for IEEE GCCE 2015. The GCCE 2015 organizing committee accepted the proposal from the team. The first session was successful at GCCE 2014 with Tom Coughlin as the chair. For the second edition (called OS-IoT), Soumya Kanti Datta acted as chair while Tom Coughlin, Thinagaran Perumal, and Joseph Wei joined as cochairs.

The main idea of the session stemmed once again from the need for a consumer-centric IoT ecosystem. We observe that the majority of the current activities in IoT are focused on architecture and protocols for efficient interconnection of heterogeneous things and creation of value-added services. We are still waiting for a killer application that would make the IoT a household

Soumya Kanti Datta presenting his paper, "Search Engine-Based Resource Discovery Framework for Internet of Things."

Audience members, along with cochairs Tom Coughlin and Thinagaran Perumal, listen to Soumya.

technology like smartphones and tablets. The CE Society FD-IoT team is actively promoting the creation of consumer-centric IoT. Coupled with that, and based on Tom's suggestion, the proposal for GCCE 2015 also

included fog computing. It is a paradigm that extends cloud computing and services to the edge of the network. Due to its proximity to end-users, dense geographical distribution, open platform, and support for high mobility, it can provide services with reduced latency and improved QoS. Thus, fog computing can be seen as an important enabler of IoT applications that demand real-time operations and are ideal for consumer-centric IoT.

Following the reviews, the session chairs recommended that the papers be accepted and settled on the order of presentation for the final program. GCCE 2015 finalized the acceptance and prepared the final program. At the beginning, I presented the goals of the IEEE CE Society FD group as well as the FD-IoT team. This was followed by the individual presentations. The OS-IoT included an invited paper from JaeSeung Song and Soojin Park from South Korea. The five presentations generated great discussions on self-adaptive IoT middleware, the necessity of discovery,

Thinagaran Perumal giving a presentation on how the IoT could be used for water quality monitoring and management.

Daichi Sugita presenting "Study of Web Service Estimation Using Only Ethernet Frame Header or IP Packet Header."

Soumya presenting the IoT device management framework for smart home scenarios.

Soumya answering a question from the award session chair.

Thinagaran receiving an award.

water management, and leakage prevention using IoT and web-based protocols. The session attracted approximately 30 people.

IEEE GCCE 2015 also marked a research collaboration among two key FD-IoT team members: Thinagaran and myself. I presented our paper, "IoT Device Management Framework for Smart Home Scenarios," in the award session on 27 October 2015. The paper received the Third Prize Excellence Award and was accepted by Thinagaran during the award ceremony and banquet since I had to leave early to attend W3C TPAC 2015 in Sapporo, Japan.

Finally, I'd like to thank and congratulate the entire organizing committee of IEEE GCCE 2015 for the high-quality conference. The FD-IoT team will continue with a similar session in IEEE GCCE 2016 in Kyoto, Japan. If you are interested in joining the FD-IoT team in the IEEE CE Society, please contact me at dattas@eurecom.fr.

CE

Conference Reports *(continued from page 20)*

Member status. We supported nine Members for inclusion in this event, and have striven to promote mutual communication among researchers and engineers.

There were also an opening ceremony and a welcoming reception at the venue on 27 October, an Osaka downtown tour on 28 October, an awards ceremony and banquet on 29 October, and a closing ceremony on 30 October, all of which provided participants with plenty of opportunities to interact with each other.

The fifth conference, GCCE 2016, will be held in Kyoto, Japan, on 11–14 October 2016. The latest information on GCCE 2016 can be found online at http://www.ieee-gcce.org/2016/. We look forward to your submissions and participation.

CE