



JAPAN SOCIETY FOR THE PROMOTION OF SCIENCE (JSPS)
UK-JSPS Symposium Scheme

Report of Symposium

1. a.) Name (in full including title): Dr. Taku Komura b.) Position: Reader c.) Affiliated Institution: School of Informatics, University of Edinburgh
2. a.) Name of Japanese Scientific Lead (in full including title): b.) Position: Prof. Yoshifumi Kitamura c.) Affiliated Institution: Tohoku University
3. Title of Symposium: JSPS UK/Japan Symposium on Computer Graphics and Virtual Reality
4. Period of Symposium and Location: 10 th November 2014
5. Names of Invited Speakers (please put a circle next to those supported by JSPS): Prof. Alan Chalmers (University of Warwick, UK) Prof. Neil Dodgson (University of Cambridge, UK) Dr. Peter Hall (Bath University, UK) Prof. Adrian Hilton (Surrey University, UK) <input checked="" type="checkbox"/> Dr. Tetsunari Inamura (National Institute of Informatics, Japan) Dr. Miguel Nacenta (University of St. Andrews, UK) Dr. Manfred Lau (Lancaster University, UK) <input checked="" type="checkbox"/> Prof. Yoshifumi Kitamura (Tohoku University) Dr. Taku Komura (University of Edinburgh, UK) <input checked="" type="checkbox"/> Prof. Kenji Mase (Nagoya University) Prof. Kenny Mitchell (Disney Research, UK) <input checked="" type="checkbox"/> Prof. Shigeo Morishima (Waseda University) <input checked="" type="checkbox"/> Prof. Yoichi Sato (University of Tokyo) Dr. Hiroshi Shimodaira (University of Edinburgh, UK) Dr. Hubert Shum (Northumbria University, UK) Prof. Anthony Steed (University College London, UK) Dr. Kartic Subr (Heriot Watt University, UK) Prof. Sriram Subramanian (Bristol University, UK) <input checked="" type="checkbox"/> Dr. Kenshi Takayama (National Institute of Informatics, Japan) Dr. Nobuyuki Umetani (Disney Research Zurich)

6. Number of participants:

UK: 30

Japan: 6

Other: 10

7. Objective of Symposium and Outline:

The JSPS UK/Japan Symposium on Computer Graphics and Virtual Reality is an international forum for the exchange of experience and knowledge among researchers and developers concerned with computer graphics and virtual reality. The symposium provides an opportunity for Japanese, UK and international CG and VR researchers to interact, share new results, show live demonstrations of their work, and discuss emerging directions for the field. The event is sponsored by JSPS and School of Informatics, University of Edinburgh.

8. Please provide a report of the symposium including details about impact as well as the UK-Japan collaborations resulting from this event (do not exceed space provided):

The JSPS UK-Japan symposium on computer graphics and virtual was held in the Informatics Forum in University of Edinburgh on 10th November 2014. The objective of the symposium was to bring together the top researchers working on topics about computer graphics and virtual reality and seek for collaborations between the researchers. There were 20 presentations in total and each speaker was given 20 minutes for the presentation. The symposium has attracted a large number of people: in addition to the 20 speakers, there were ten attendants from Disney Research Edinburgh, ten from University of Edinburgh, and around nine researchers from countries including Switzerland, Korea and Hong Kong.

All the talks were very impressive, presenting the state-of-the-art work in a variety of areas, but here I briefly report about a few of the very distinctive presentations.

- Prof Sriram Subramanian from University of Bristol presented about a system to virtually touch and feel the shape of virtual objects, which is a work that bridges the virtual world and the physical world. He also presented a 3D display system where virtual objects are projected onto mist. These works made us feel virtual reality research has entered a new era and a whole new bunch of applications will appear in the next few years.
- Dr. Nobuyuki Umetani from Disney Research Zurich has presented a system where the users can freely design shapes of paper-planes and the system automatically tunes their shapes such that they fly well considering the aerodynamics. This impressive work made us think that the application of computers for entertainment can greatly grow in the coming future.
- Prof. Adrian Hilton presented his system that captures 3D movements of people based on the convex-hull technology. He further extends the idea to produce animation of the actors based on the captured 3D surfaces. This method proposes a new direction of animating photo-realistic characters.
- Prof. Kenji Mase from Nagoya University presented about custom-designed thread in which gage sensors are embedded. Cloth produced from this thread can be used for pressure sensing, and by using it as a bed sheet, it can be applied for analysis of bedsores. Such type of embedded sensors has a wide range of applications, including robotics, sports analysis and medical usage.
- Prof. Yoshifumi Kitamura presented his system about 3D motion capture using the magnetic field. Using the magnetic field for 3D sensing is a classic idea, but his system is very different from existing ones where the coils are attached to the body and the sensors are embedded in the environment, which is opposite from existing systems. Such a system has an advantage in sense that it is much less intrusive and can be used for capturing fine finger movements.

As a result of this symposium, several collaborations are starting. First, between University of Edinburgh and Tohoku University. Taku Komura from University of Edinburgh has been working on 3D human motion analysis and synthesis and this is a good match with the 3D magnetic motion capture system developed by Prof. Kitamura from Tohoku University. Taku Komura is visiting Tohoku University on December 2014 in order to enhance the 3D magnetic motion capture system developed there.

Taku Komura is also starting a new collaboration with Dr. Tetsunari Inamura about controlling animated characters and virtual robots in a virtual environment. This is to enhance research about close interactions such as manipulating objects and moving through constrained environments. Taku Komura is planning to visit Dr. Tetsunari Inamura's laboratory next year.

Prof. Kitamura is starting collaborations with Dr. Miguel Nacenta about Perspective corrected dynamic 3D window environment, and also about Interactive visualization of big data. He is also planning to start new collaboration with Prof. Sriram Subramanian soon. They plan to make mutual visits next year.