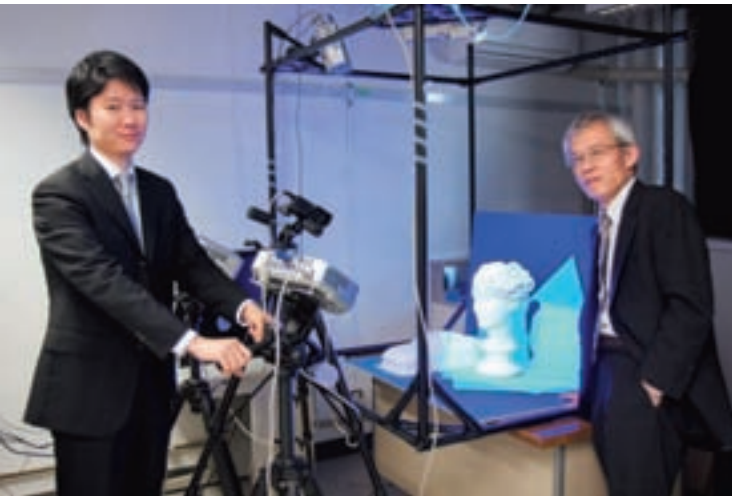


Expanding the Possibilities of Image Media by Computer Vision



Graduate School of Information Sciences
[Image Analysis]

Koichiro Deguchi

Professor

Graduated from the MS course of the Faculty of Engineering, University of Tokyo. Worked at Yamagata University and the University of Tokyo. He has been in this position since 1998.

Takayuki Okatani

Associate Professor

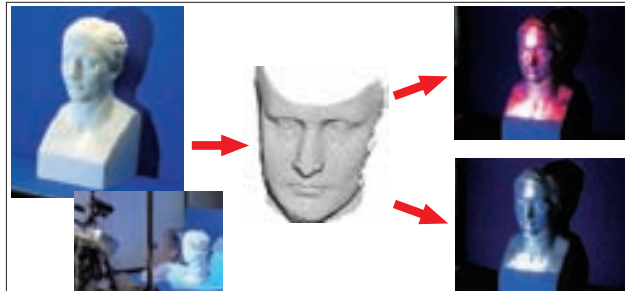
Graduated from the Ph.D. course of the Faculty of Engineering, University of Tokyo. He has been in this position since 2002.

The Deguchi and Okatani Laboratory has established a new area of "Active computer vision" where the dynamic changes of 3D object shapes and 3D space structures are analyzed from actively observed images. The Laboratory has been developing its wide applications in industrial and medical image measurements. The development includes a vision system for robots which recognizes the environment in order to control active movements. The visual function is an important key for robots and intelligent machines to support human works.

The Laboratory also engages in constructing basic theories of human image perception, pattern recognition, and shape description to extend the possibilities of image media. The development of next-generation image media based on these theories will help us to elucidate human visual functions, including 3-dimensional perception and motion information extraction.



Object image tracking: A person is continuously tracked in a sequence of images even in scattered backgrounds.



Construction of a virtual reflectance: Object 3D shape is reconstructed online from a camera image, and special patterns are projected onto it to make it look as if it was made of different materials.



New type of 3D stereo display: Measuring the viewing point of the viewer, sharpness and blur-level of the image displayed are controlled to enhance the 3D shapes of the objects.

http://www.fractal.is.tohoku.ac.jp/index_en.html

Multi-Aspect Study on the Problem of Social Stratification and Inequality Raising the Issue of Social Disparity

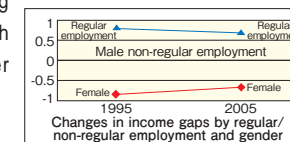


The Center for the Study of Social Stratification and Inequality formed in the 21st Century COE Program has elucidated social stratification and inequality, which is an important social problem of our times from four perspectives: the structure and change of social stratification and inequality, East Asia, minorities, and fairness. Concurrently with this program, the director of the Center, Professor Yoshimichi Sato, has conducted a "Comprehensive Study on Structure and Change of Social Stratification System in Contemporary Japan" as a Grant-in-Aid for Specially Promoted Research of the Ministry of Education, Culture, Sports, Science and Technology, where he conducted a countrywide Social Stratification and Mobility (SSM) survey. Through both programs, the professor has acquired knowledge of interesting facts.

One of the findings is an income disparity between regular employment and non-regular employment. Although this has been taken up as a big issue by mass media, no discussion had been held on precise statistical analysis. Professor Sato then conducted an SSM survey and analyzed the results after removing the effects of age, gender and job. The analysis results have revealed that regular employees earn 2.13 times higher income than non-regular employees. It is, however, not necessarily true that the "income gap is widening." The figure shows changes in the effects of regular/non-regular employment and gender on income.

As seen in the figure, gaps by employment form and gender have both become smaller. These results were published in Political Economy Quarterly and noted in a TV news program on NHK.

The study of social stratification and inequality has not only an academic meaning, but also a social meaning because it involves basic research being used to help make a better society.



Arrangements for research in the Center for the Study of Social Stratification and Inequality

Various education and research activities in the Center

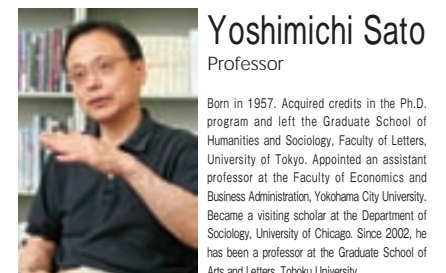


Books in English to spread the research activities of the Center around the world (Published by Trans Pacific Press)



Professor Sato with Ms. Rumi Matsuzaki and Mr. Yusuke Hayashi, both COE graduate students

Graduate School of Arts and Letters
[Behavioral Science and Sociology]



Yoshimichi Sato
Professor

Born in 1957. Acquired credits in the Ph.D. program and left the Graduate School of Humanities and Sociology, Faculty of Letters, University of Tokyo. Appointed an assistant professor at the Faculty of Economics and Business Administration, Yokohama City University. Became a visiting scholar at the Department of Sociology, University of Chicago. Since 2002, he has been a professor at the Graduate School of Arts and Letters, Tohoku University.

<http://www.sal.tohoku.ac.jp/coe/index.html>