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International Center for Urban Safety Engineering, Institute of Industrial Science, The University of Tokyo

Dr. MIZUTANI joins ICUS

Kimiro MEGURO, Director of ICUS, IIS, The University of Tokyo

I am very happy to introduce a promising young researcher, Dr. Tsukasa MIZUTANI, to ICUS friends. Dr. MIZUTANI joined ICUS on the 16th June 2017 as a Project Lecturer. After receiving his Doctoral Degree of Engineering from The University of Tokyo in September 2011, he became an Assistant Professor of the Department of Civil Engineering, Graduate School of Engineering at The University of Tokyo. While he was an Assistant Professor, he stayed in The University of Cambridge, UK, as a Visiting Researcher of the Department of Civil Engineering.

Dr. Tsukasa MIZUTANI

He has mainly worked on extracting physically significant information from various data by using advanced digital signal processing techniques. The data he has been treating includes electromagnetic waves, vibration, sound, weather and so on. For example, he could detect heavy rain which has become a problem in recent year in Japan by analyzing the fluctuation of extremely weak and noisy radio wave of a communication antenna called "Leaky Coaxial Cable (LCX)" which is installed throughout Japan. For this analysis, he developed a unique, sophisticated signal processing technique so-called "Multifractal Analysis" which is a kind of chaotic time series analysis.

Currently he is focusing on the development of fast non-destructive testing (NDT) technology for road bridges (Fig.1). In his proposed NDT, vehicles equipped with "Ground Penetrating Radar (GPR)" measure a large amount of reflection signals of electromagnetic waves from inside the road bridge while driving at a high speed of 80 km/h. By theoretically analyzing the data of the reflected wave and quantitatively evaluating its slight change, he indicated that damage such as fine cracks of 0.1 mm order width inside the road bridge can be detected accurately and automatically. Currently, he is building a fully automated analysis system and if it is completed it can monitor the structural condition of the road bridge in a wide range of area.

He has challenged various studies and made numerous achievements so far and furthermore he has received a number of academic awards such as “Best Paper Award for Young Researcher” from Japan Society of Hydrology and Water Resources, “Best Paper Award” from Japan Association for Wind Engineering, and “Kazuyoshi Yamada Prize” from Maeda Memorial Engineering Promotion Foundation.

ICUS welcomes Dr. MIZUTANI with his advanced knowledge and excellent research achievements made in his career and we are sure that he will contribute greatly to our activities as well as international projects such as SIP and SATREPS.

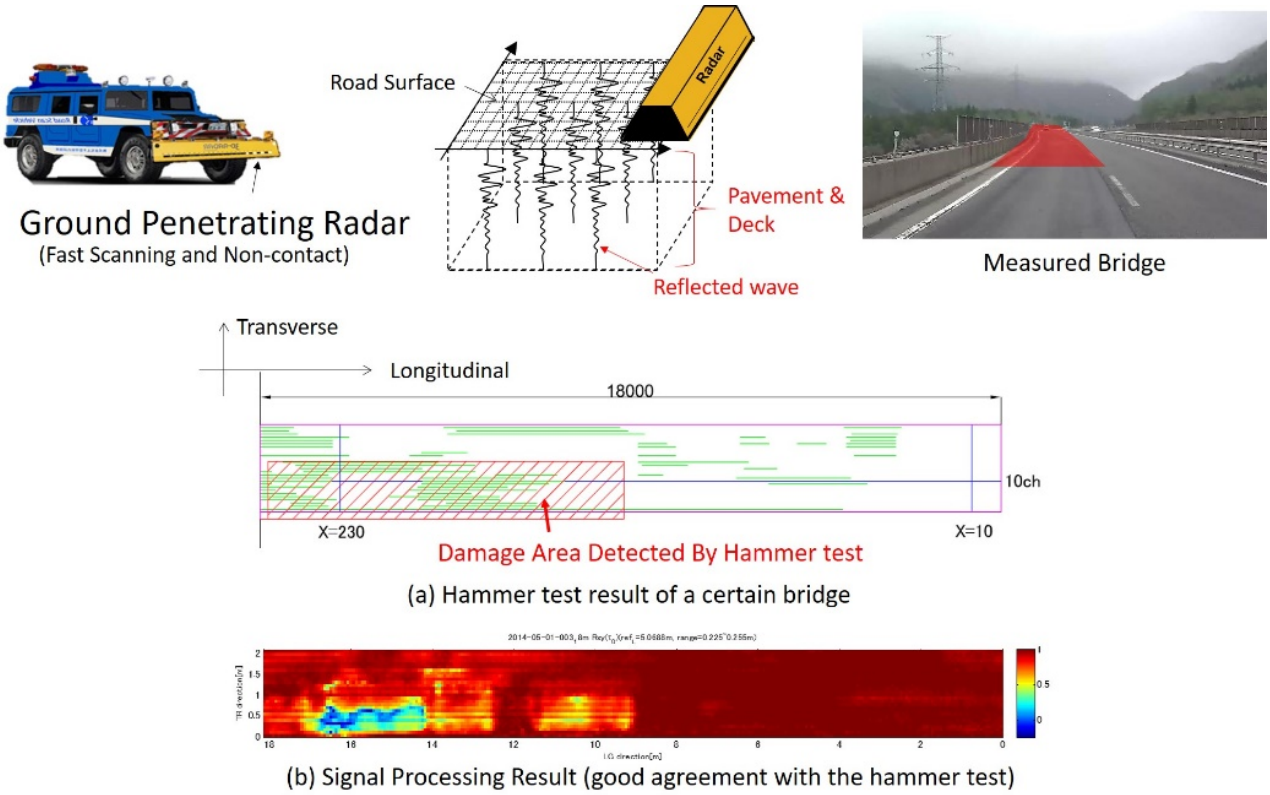

Fig.1 Fast non-destructive testing (NDT) technology for road bridges