Invited Talk Abstract

Date: 16:10-17:10, January 23rd, 2019
Organizer: IEICE Kyushu Section
Cooperation: IEEE Antenna and Propagation Society (APS) Fukuoka Chapter
            IEEE Aerospace and Electronic Systems Society (AESS) Japan Chapter
Venue: Lecture room 23, 2nd building of Faculty of Engineering, Nagasaki University

SPEAKER:

Yang-Lang Chang 張陽郎

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Taipei Chapter Chair of IEEE GRSS

TITLE: High-Performance Computing in Remote Sensing

ABSTRACT: This talk presents recent progress in High-Performance Computing in Remote Sensing and their applications. Technological advances in modern active and passive sensors with higher spectral, spatial and/or temporal resolutions have resulted in a substantial increase in multidimensional data volume. This increase poses a challenge to remote sensing big data processing in a timelier fashion for environmental, commercial or military applications. High-performance computing (HPC) is needed to process ever larger amounts of data and help researchers make scientific breakthroughs in many areas of geoscience and remote sensing. Parallel, distributed and grid computing facilities and algorithms have become indispensable tools to tackle the issues of processing massive remote sensing data. In recent years, the graphics processing unit (GPU) has evolved into a highly parallel many-core processor with tremendous computing power and high memory bandwidth to offer two to three orders of magnitude speedup over the CPU. A cost-effective GPU-based computer has become an appealing alternative to an expensive CPU-based computer cluster for many researchers performing various scientific and engineering applications. This talk aims to present state-of-the-art research in incorporating HPC facilities and algorithms for effective and efficient remote sensing applications. Some interesting examples of HPC remote sensing applications, developed recently by our lab, will be illustrated in this talk.

BIOGRAPHY: Yang-Lang Chang received his BS degree in Electrical Engineering from Chung Yuan Christian University, Taiwan; his MS degree in Computer Engineering from Syracuse University; and his PhD degree in Computer Science and Information Engineering from the National Central University, Taiwan. He started his career with NDC IBM Taiwan as a Hardware Design Engineer before joining ALCATEL as a Software Development Engineer. He was a Visiting Scientist of Space Science and Engineering Center at University of Wisconsin-Madison and presently is Professor and Departemant Chair in the Department of Electrical Engineering, and Director of High Performance Computing and Deep Learning Lab and NVIDIA-Taipei Tech Embedded GPU Joint Lab at National Taipei University of Technology. Dr. Chang is a Senior Member of IEEE, a Member of SPIE, Phi Tau Phi Scholastic Honor Society, the Chinese Society of Photogrammetry and Remote Sensing, and the Chinese Society of Image Processing and Pattern Recognition. He has been General Co-Chairs, Workshop Chair, Program Committee members and Session Chairs for several international conferences. He serves as Guest Editors for the special issue on High Performance Computing in Earth Observation and Remote Sensing in IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, the special section of Journal of Applied Remote Sensing on High-Performance Computing in Applied Remote Sensing, and the special issue of Remote Sensing on GPU Computing for Geoscience and Remote Sensing. He also served as a General Secretary, and is currently the Chair of Taipei Chapter of IEEE Geoscience and Remote Sensing Society. His research interests are in Remote Sensing, High Performance Computing, Deep Learning, Pattern Recognition, Image Processing, and SAR and hyperspectral images analysis.

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