[Press Release]

"First Prize" in Satellite Image Recognition Competition of Building Detection by AI/Machine Learning Technology

CVPR（IEEE Conference on Computer Vision and Pattern Recognition）2018 DeepGlobe Satellite Challenge – Building Detection task

PASCO CORPORATION (Headquarters: Tokyo, Japan, President and CEO: Dr. Hideki SHIMAMURA, hereinafter referred to as PASCO) provides the results by processing and analyzing the geospatial information collected by satellites, aircraft, specialized vehicles, etc., as a geospatial information service for solving the social problems.

Especially for the services that utilize Earth Observation satellites, PASCO provides "Urban Change Analysis Map" and "Estimated Number of Parked Vehicles Map" in addition to "Agricultural Land Use Survey Support Service" and "Surface Movement Monitoring Service".

This time, for the building detection task in the DeepGlobe Satellite Challenge (an international competition) of "CVPR" which is the world's most prestigious academic conference in the computer vision research held in Salt Lake City, Utah, USA in June 2018, the team of PASCO's Satellite Business Division achieved the highest accuracy by utilizing company's proprietary AI/Machine learning technology (deep learning technology) and won the challenge.

(Ryuhei HAMAGUCHI & Shuhei HIKOSAKA, PASCO CORPORATION)

■ **Conference overview**

Name: IEEE Conference on Computer Vision and Pattern Recognition (CVPR)

Duration: June 18 – 22, 2018

Location: Salt Palace Convention Center, Salt Lake City, Utah, USA

URL: http://cpr2018.thecvf.com

CVPR is the world's most prestigious academic conference in computer vision research, and in recent years, many state-of-the-art technologies related to image recognition using Artificial Intelligence (AI) have been announced. At this conference, nearly 1000 papers were published from all over the world, and over 5000 people participated.

■ Conference overview

Name: DEEPGLOBE CVPR 2018 - Satellite Challenge
URL: http://deepglobe.org/leaderboard.html

The competition took place for recognition accuracy in satellite imagery interpretation for three different tasks, building detection (389 teams), road extraction (454 teams) and land cover classification (400 teams). PASCO team won the 1st place in building detection task.

■ Paper summary

In the recent years, convolutional neural networks (CNNs) show remarkably high performance in building detection tasks. Many previous studies have been conducted so far but it was not considered sufficiently about how to address a wide variation in building size, and how efficiently to incorporate with context information such as roads. On the other hand, in this research, we proposed a multitask model that can handle differences in size of buildings appropriately by using specialized detectors for each size of buildings. In addition, the model implicitly utilizes context information by simultaneously training road extraction task along with building detection task.

Our experiment showed that the proposed model can greatly improve the detection accuracy of the building.

The reason that the PASCO team won the challenge was the method of handling buildings which is patent applied according to size, and such an approach was not found among the methods of other participants, and it was unique among all participants.
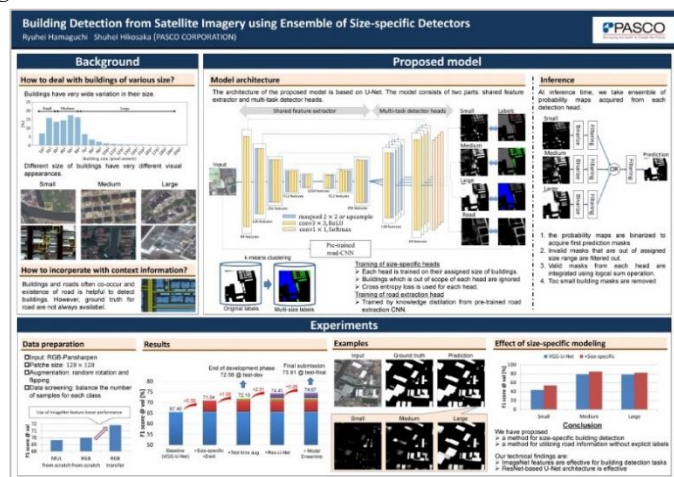
http://openaccess.thecvf.com/content_cvpr_2018_workshops/papers/
w4/Hamaguchi_Building_Detection_From_CVPR_2018_paper.pdf

■ Utilization of results

PASCO will utilize this result for building change interpretations, international statistical estimation, updates of forecast map, etc., to improve the quality of services we offer to solve society's problems, and also for the company's internal productivity.

■ Contact

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