



Analyzing Cargo Handling Space in Container Yard with Drone

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Abstract. Artificial intelligence progresses in high speed in our society. In recent years, it has become possible to reach a solution close to the correct solution for similar events experienced in the past by improving the capability of general-purpose computers. The Artificial intelligence system is evolving one after another which can be learned and recognized by itself as if the human learns it. The system which realized this self-learning is called neural network, and it is made to imitate nerve cell which forms human brain. In nerve cells, each cell has a large number of hands, and the cells reach each other's hands and exchange information through synapses. This study analysed using the deep learning by the neural network that the container be on the container yard or not which was recognized by the image processing of camera on the drone. Using 100 containers as image samples, deep learning was performed by the reverse error propagation method. In the repetition of 100 times, the cost function can be lowered to 0.015 in the 3 primary colour system, and the high discrimination result was obtained. For an event without a clear solution, an effort to reach an optimum solution by carrying out deep learning by neural network with AI is promoted in various fields. It is said that artificial intelligence will surpass human in a near future. The algorithm of AI is based on the mathematics, and it can reach the solution faster and more efficiently than the human, but it is not able to surpass the human wisdom. We think that the way of coexistence with AI should be pursued by extending tentacles in various directions and cultivating more wisdom.

Keywords: Artificial intelligence, Deep learning, Drone, Image processing, Backpropagation