Thesis Title	Beam Prediction using Convolutional Neural Network and Artificial Neural Network
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ABSTRACT

In the Sixth-Generation mobile network, beam training methods will be used due to energy loss that requires more computation. Therefore, this study introduces a beam prediction approach using machine learning techniques with data preprocessing methods. The model contains a convolutional neural network and a multilayer perceptron network that accepts images and global positioning system (GPS) data as inputs. This study used 15281 images and 15281 GPS data samples from an online dataset to evaluate the model. The proposed approach was tested with 64 and 32 beam indexes output classes and resulted in 88.98% and 85.72% accuracies respectively. Furthermore, the model showed precision and recall values of 89.09% and 89.15% for 64 classes and 85.87% and 85.66% for 32 classes respectively.

Keywords: Sixth-Generation Mobile Network, Beam Training, Beam Prediction, Convolutional Neural Network, Multilayer Perceptron