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A Study on Learning Interaction Relationships for Indoor Human Activity with RGB-D Video

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Keywords: Activity Recognition, Human-human interactions, Human-object interactions, Recurrent neural networks.

Understanding human activity has been an important research area in computer vision. Generally, we can model the human interactions as a temporal sequence with the transition in relationships of humans and objects. On the other hand, many studies have proved the effectiveness of [Long Short-Term Memory \(LSTM\)](#) networks in long-term temporal dependency problems. In this study, the author proposed a novel [Structured Recurrent Neural Network \(S-RNN\)](#) to model spatio-temporal relationships between human subjects and objects in daily human interactions. The author represent the evolution of different components as well as the relationships between them over time by several [LSTM](#) subnets. Then, the hidden representations of those relations are fused into the later layers to obtain the final hidden representation. The prediction is carried out by the single-layer perceptron. The experimental results of different tasks on the CAD-120, SBU-Kinect-Interaction, and [Multi-modal & Multi-view & Interactive \(M2I\)](#) datasets showed advantages of the proposed method compared with the state-of-art methods.