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GRCNN: Graph Recognition Convolutional Neural Network for Synthesizing Programs from Flow Charts

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Abstract : Program synthesis is the task to automatically generate programs based on user specification. In this paper, we present a framework that synthesizes programs from flow charts that serve as accurate and intuitive specification. In order doing so, we propose a deep neural network called GRCNN that recognizes graph structure from its image. GRCNN is trained end-to-end, which can predict edge and node information of the flow chart simultaneously. Experiments show that the accuracy rate to synthesize a program is 66.4%, and the accuracy rates to recognize edge and node are 94.1% and 67.9%, respectively. On average, it takes about 60 milliseconds to synthesize a program.

Keywords : program synthesis, flow chart, specification, graph recognition, CNN
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