UNIVERSITY OF SOUTH FLORIDA

Defense of a Doctoral Dissertation

Knowledge Extraction and Inference Based on Visual Understanding of Cooking Contents

by

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For the Ph.D. degree in Computer Science and Engineering

This dissertation focuses on analyzing cooking content for the ultimate goal of automatic robotic manipulation. For a robot to perform a cooking task, it will need to both have an understanding of the scene and utilize prior knowledge. We will explore two main sub-problems: knowledge extraction and inference, and visual understanding of the scene in this dissertation. Visual understanding of a scene, requires computer vision based algorithms which can visually infer information from a single image or video. Although great advances has been achieved by the emergence of deep learning, state-of-the art algorithms in this area have limitations. To attempt to overcome this lack of performance, we propose to use structured knowledge representations combined with state of the art deep learning techniques for visual understanding of cooking videos. Besides objects, and motions, we recognize that states of objects are important in interpreting the scene and introduce the state identification challenge in cooking applications and collect a dataset for research in the area of ingredient state analysis. We look into the problem of simultaneous knowledge extraction from a single image and extracting information ab TJ0 Tc 0.012 Tw -1.40

Online (Microsoft Teams)

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THE PUBLIC IS INVITED

Publications

1A. B. Jelodar   , and Y. Sun. "Functional Object-Oriented Network: Construction & Expansion." Dwayne Smith, Ph.D.