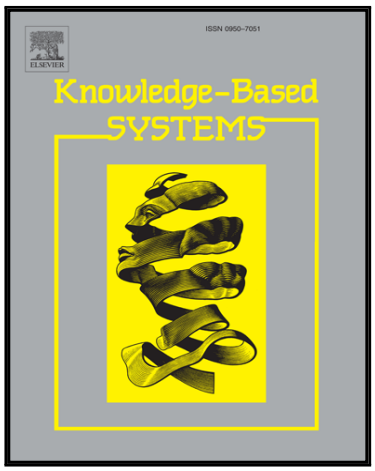

People Detection and Articulated Pose Estimation Framework for Crowded Scenes

Sohailah Alyammahi, Harish Bhaskar, Dymitr Ruta, Mohammed Al-Mualla

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People Detection and Articulated Pose Estimation Framework for Crowded Scenes

Sohailah Alyammahi[a,*], Harish Bhaskar[a], Dymitr Ruta[b], Mohammed Al-Mualla[a]

[a] *Department of Electrical and Computer Engineering, Khalifa University, UAE*
[b] *Etisalat British Telecom Innovation Centre, Khalifa University, UAE*

Abstract

In this paper, we propose a novel articulated pose estimation framework for the simultaneous detection of the human as a whole and their constituent body parts in crowded scenes. The model uses a single discriminative classifier that searches for dependent limbs thereby alleviating the independent inference limitation of other state-of-the-art models. The proposed framework is a hierarchical model that detects humans at both macro and micro levels by fusing global and local detectors. The proposed methodology is validated using a publicly available crowd dataset captured indoors in a sports stadium. Detection results are assessed using the percentage of correctly localized parts (PCP) evaluation metric and compared against competing baselines. Our experimental results report mean detection accuracy of 85% for the global upper body, 95% for the head, 82% for the torso, 71% and 60% for upper and lower arms respectively. A systematic analysis of results also verifies that the proposed model outperforms the state-of-the-art models in terms of detection rate, accuracy and computational complexity.

Keywords: Crowd scenes, hierarchical model, joint model, support vector machines, deformable part models, percentage of correctly localized parts.

*Corresponding author. Tel: +971 25018590, Fax: +971 24472442.
Email addresses: sohailah.alyammahi@kustar.ac.ae,sohailah.alyammahi@gmail.com (Sohailah Alyammahi), Harish.Bhaskar@kustar.ac.ae,harishbhasky@gmail.com (Harish Bhaskar), dymitr.ruta@kustar.ac.ae (Dymitr Ruta), almualla@kustar.ac.ae (Mohammed Al-Mualla)