



## **A REAL-TIME PEDESTRIAN DETECTION SYSTEM IN STREET SCENE**

Ai-ying Guo<sup>1</sup>, Mei-hua Xu<sup>1,2</sup>, Feng Ran<sup>3</sup>, Qi Wang<sup>3</sup>

<sup>1</sup> School of Mechatronics Engineering and Automation, Shanghai University, 200072, Shanghai, P.R.C

<sup>2</sup> Department of Electrical and Mechanical Engineering, Shan Xi Light Industry and Technical College, 030013, Shanghai, P.R.C

<sup>3</sup> Microelectronics Research and Development Center, Shanghai University, 200072, Shanghai, P.R.C

Emails: [gayshh@shu.edu.cn](mailto:gayshh@shu.edu.cn); [mhxu@shu.edu.cn](mailto:mhxu@shu.edu.cn); [ranfeng@shu.edu.cn](mailto:ranfeng@shu.edu.cn); [175858895@qq.com](mailto:175858895@qq.com)

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*Submitted: Apr 17, 2016*

*Accepted: Aug. 1, 2016*

*Published: Sep. 1, 2016*

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*Abstract-Pedestrian detection is the key technology in Advanced Driver Assistant System (ADAS). Until recently, pedestrian detection, which is realized as the vehicle equipment, still doesn't have the mature product. So, this thesis proposes a novel pedestrian detection system on board with the E-HOG (Histogram of Gradient) IP (intellectual property), can be used as the real time vehicle equipment. Three contributions are made in this thesis. Firstly, Sobel operator cascaded Uniform Local Binary Pattern (LBP) and E-HOG is the novel structure of pedestrian detection system. The Sobel operator gives the sliding step of Uniform LBP detection window, without using the results of LBP detection window. Through this operation, the detection speed will be improved. Second, the vehicle equipment of pedestrian detection is self-developed using FPGA as core devices. Third, E-HOG IP, which is promoted based on the HOG, can extract pedestrian or other objects feature. Without sacrifice of accuracy, this pedestrian detection on board deals with 30 fps (640x480 pixels) and can be used as the real-time detection system.*

*Index term: Pedestrian Detection; Real-Time; Street Screen; Sobel; LBP; E-HOG; Accelerator; IP; Vehicle equipment*