

## ***Abstract: Classification of Camera-Models based on Two-step Transition Matrix***

Shang Gao<sup>1</sup>, Rui-Min Hu<sup>1\*</sup>, Tao Lu<sup>2</sup>

<sup>1</sup> *National Engineering Research Center for Multimedia Software, Wuhan University, Wuhan, China*

<sup>2</sup> *Hubei Province Key Laboratory of Intelligent Robot, Wuhan Institute of Technology, Wuhan, 430070, China*

*email.nancy.g@gmail.com, hrm1964@public.wh.hb.cn, lut@whu.edu.cn*

### **Abstract**

In this paper, we propose a camera-model classification method based on two-step transition Matrix. The artifacts introduced by the whole camera inside imaging processing can reflect model-specific to some extent, and will be left on JPEG quantified coefficients more or less. Therefore, for camera-model identification, we can model JPEG quantified coefficients by Markov process, and use two-step transition matrix as features to capture these artifacts. We design a 63-D feature set and perform camera-model classification. Image from seven camera models in the Dresden Image Database are chosen as our experiment database. Experiment results show that in seven models detection, even with low dimension features, the average detection accuracy of our method can reach to 99.49%, which is higher than that of previous Markov method [12].

### **Acknowledgements**

The Database in this paper is from ‘Dresden Image Database’. This paper was supported by the major national science and technology special projects ( 2010ZX03004-003-03 ), the National Natural Science Foundation of China (61070080, 60970160, 61003184), the Natural Science Foundation of Hubei Province of China (2009CDA134, 2010CDB05103), the Fundamental Research Funds for the Central Universities (3101011), the Hubei Province Key Laboratory of Intelligent Robot ( HBRI 200907 ), the youths science foundation of Wuhan institute of technology.