

PAPER ID: 17-04-0183	<p style="text-align: center;"><b>Multi-Scale Skin Sample Approach for Dynamic Skin Color Detection: An Analysis</b></p> <p>Mohd Zamri Osman<sup>1,2</sup>, Mohd Aizaini Maarof<sup>2</sup>, Mohd Foad Rohani<sup>2</sup>, Kohbalan Moorthy<sup>1</sup>, Suryanti Awang<sup>1</sup></p> <p><sup>1</sup>Soft Computing and Intelligent System Research (SPINT), Faculty of Computer System &amp; Software Engineering, Universiti Malaysia Pahang, 26300 Gambang, Kuantan, Malaysia  <sup>2</sup>Information Assurance and Security Research Group (IASRG), Faculty of Computing, Universiti Teknologi Malaysia, 81310 Skudai Johor, Malaysia</p> <p>Skin detection is an important step in many computer vision applications. It has been employed in face detection, hand gesture recognition, illicit image filtering, steganography and content based image retrieval. This is due to the skin colour that attractive feature in detecting the skin in coloured image. In contrast, skin colour detection suffers in low accuracy due to colour properties between the real skin surface and the skin-like objects. Therefore, this paper proposes a dynamic skin colour detection using multi-scales online skin sampling approach. This dynamic skin colour detection involved two procedures for generating the dynamic threshold in colour spaces. Moreover, six colour spaces have been studied to find the best colour models for our proposed method. The first procedure is the online skin sampling that obtained directly from the face candidates to generate the dynamic threshold values of each studied colour spaces. Alongside with the first procedure, we obtained optimal scale for skin sample with 0.25, 0.2 reduction, Meanwhile, the second procedure known as skin pixel classification uses the dynamic threshold obtained from the first procedure to classify the skin in the image. We achieved a satisfactory result in term of precision, recall, accuracy and <math>F_1</math>. The experimental result shows that the proposed dynamic skin colour detection achieved good performance via <math>YCr</math> colour model.</p> <p><b>Keywords:</b> Dynamic skin detection, skin colour detection, online skin sampling, dynamic threshold, colour space.</p>
PAPER ID: 17-04-0187	<p style="text-align: center;"><b>Motion Analysis-Based Application for Enhancing Physical Education</b></p> <p>Hasan Kahtan<sup>1</sup>, Suryanti Binti Awang<sup>1</sup>, Tuty Asmawaty Binti Abdul Kadir<sup>1</sup>, Maath S. Abdulghafoor<sup>2</sup>, Tuan Siti Shahirah Binti Tuan Shamsuri<sup>1</sup></p> <p><sup>1</sup> Faculty Computer Systems &amp; Software Engineering, Universiti Malaysia Pahang, 26300, Malaysia.  <sup>2</sup> Institute of Visual Informatics, Universiti Kebangsaan Malaysia 43600 Bangi Selangor, Malaysia.</p> <p>Physical education plays an important role in positively influencing students to develop a good learning process and a healthy lifestyle. Moreover, physical education assists students and athletes in developing muscular strength, maintaining fitness, and improving cardiovascular health. Issues arise when the lack of actual pattern of movement of children in sports leads to difficulties in implementing the correct movement, thereby decreasing the interest of students in physical education and students may suffer from muscular injury if they make the wrong movement. In this study, a human motion analysis method is utilized to overcome the abovementioned issues. Human motion analysis supports physical education in analyzing human movement behavior or patterns in conducting physical activities. Thus, this paper aims to develop an application for teaching students to perform the correct movement during physical education courses using motion analysis, which can help reduce the threats to physical education and solve its main issue, which is injury in athletes. The proposed application is expected to increase the interest and participation levels of students in physical education courses.</p> <p><b>Keywords:</b> Physical Education, Motion Analysis Method, Kinect Sensor, Computational Intelligence.</p>