



## **FACE DETECTION IN PROFILE VIEWS USING FAST DISCRETE CURVELET TRANSFORM (FDCT) AND SUPPORT VECTOR MACHINE (SVM)**

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*Abstract- Human face detection is an indispensable component in face processing applications, including automatic face recognition, security surveillance, facial expression recognition, and the like. This paper presents a profile face detection algorithm based on curvelet features, as curvelet transform offers good directional representation and can capture edge information in human face from different angles. First, a simple skin color segmentation scheme based on HSV (Hue – Saturation - Value) and YCgCr (luminance - green chrominance - red chrominance) color models is used to extract skin blocks. The segmentation scheme utilizes only the S and CgCr components, and is therefore luminance independent. Features extracted from three frequency bands from curvelet decomposition are used to detect face in each block. A support vector machine (SVM) classifier is trained for the classification task. In the performance test, the results showed that the proposed algorithm can detect profile faces in color images with good detection rate and low misdetection rate.*

**Index terms:** face detection, curvelet transform, HSV, YCgCr, SVM.