

Real-time Defect Detection of Textile Fabrics

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This contribution deals with a procedure of defect detection occurred in textiles and thus monitoring fabrics production process. Detection algorithm is based on spectral approach with the aid of 2D Fourier transform which has shown to be suitable method of describing periodic and almost periodic structure of fabrics. Multivariate control charts are used as a tool for monitoring several quality variables. In order to off-line and real-time quality monitoring of fabrics we built up a prototype machine, which consist of aluminum frame, DC motor, LED lights and line scan camera. Fabric width is 50 cm and maximum winding speed of about 16 m/min can be achieved. The core of detection algorithm utilizes time-consuming Fourier analysis, so we decided to split an acquired image into independent parts and let the work be done concurrently. Writing native, multi-threaded and scalable code, that takes advantage of modern multi-core machines, is our main objective. Based on Visual C++ language and additional libraries we are able to check 1 m² of fabric in about 1.5 second on Intel Core2 Quad CPU. We use OpenCV library with Intel Threading Building Blocks templates for the most part.