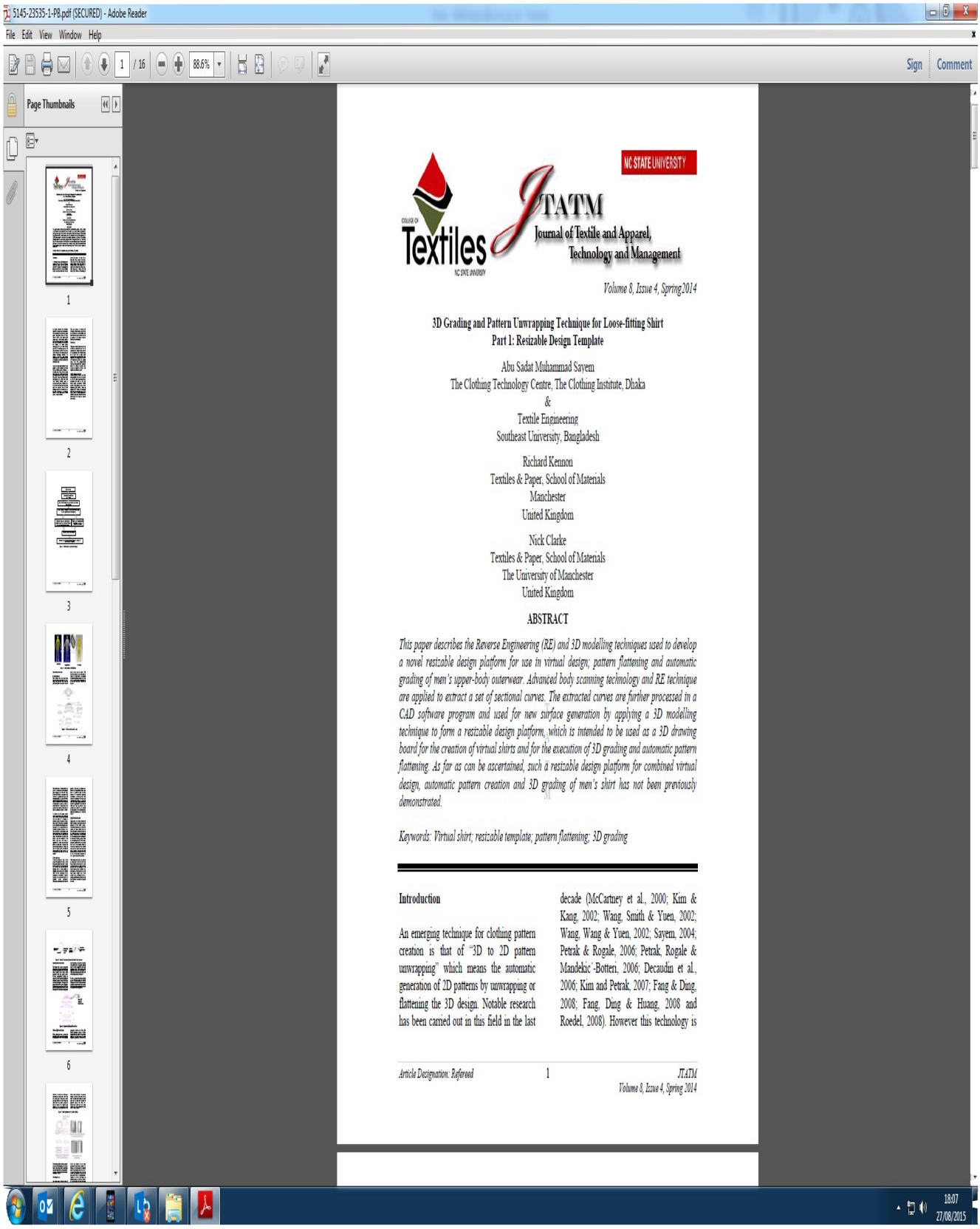

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3D Grading and Pattern Unwrapping Technique for Loose-fitting Shirt Part 1: Resizable Design Template

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ABSTRACT

This paper describes the Reverse Engineering (RE) and 3D modelling techniques used to develop a novel resizable design platform for use in virtual design; pattern flattening and automatic grading of men's upper-body outerwear. Advanced body scanning technology and RE technique are applied to extract a set of sectional curves. The extracted curves are further processed in a CAD software program and used for new surface generation by applying a 3D modelling technique to form a resizable design platform, which is intended to be used as a 3D drawing board for the creation of virtual shirts and for the execution of 3D grading and automatic pattern flattening. As far as can be ascertained, such a resizable design platform for combined virtual design, automatic pattern creation and 3D grading of men's shirt has not been previously demonstrated.

Keywords: Virtual shirt; resizable template; pattern flattening; 3D grading

Introduction

An emerging technique for clothing pattern creation is that of "3D to 2D pattern unwrapping" which means the automatic generation of 2D patterns by unwrapping or flattening the 3D design. Notable research has been carried out in this field in the last decade (McCartney et al., 2000; Kim & Kang, 2002; Wang, Smith & Yuen, 2002; Wang, Wang & Yuen, 2002; Sayem, 2004; Petrak & Rogale, 2006; Petrak, Rogale & Mandekic'-Botteri, 2006; Decaudin et al., 2006; Kim and Petrak, 2007; Fang & Ding, 2008; Fang, Ding & Huang, 2008 and Roedel, 2008). However this technology is

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