# A Production Scheduling System Based on Genetic Algorithm for Elastic Knitted Fabrics

**T. S. Chen[1], R. C. Chen[2], C. C. Lin[3], and <u>K. C. Lin</u>[4]**

**Abstract:** In the 20th century, flexible yarn was one of the most important discoveries in textile industry. It has characteristics in comfort, wrinkle resistance, elasticity, and good form-fitting. Therefore, the production of flexible fabric has become a focused publication since it was developed.

The production processes of the flexible fabric are very complex. Those processes need much domain knowledge. Hence, it is difficult to make a good production scheduling. For this reason, a good scheduling system is thus greatly needed. Because different companies have different operational environment and business constraints, it is not easy to find a suitable scheduling system for a company. Many businesses arrange production by the experiences of senior schedulers. But the complex production situations may cause the unexpected reasons to be produce by the schedulers' experiences. Consequently, a scheduling system that can help product controllers to arrange production more easily and flexibly is very important.

The purpose of this paper is to design a scheduling system for flexible knitted fabric production. The system is designed to support production controllers to arrange production to fulfill customer orders within a short time. The input data which contains the basic information about customer orders of the system are collected directly from the ERP system. In this study, we use genetic algorithm to be the analytical tool. Many pervious studies verify that genetic algorithm is useful in scheduling production. The system can arrange production automatically according to the fitness function. The system is designed to be easy to use, flexible, automatic and appropriate to the production of flexible knitted fabrics.

[1,3,4] Institute of Computer Science and Information Technology
National Taichung Institute of Technology
No. 129, Sec. 3, Sanmin Rd., Taichung, Taiwan 404
*tschen@ntit.edu.tw, cid@rising.com.tw, b847072@mail2000.com.tw*

[2] Department of Logistics Engineering and Management
National Taichung Institute of Technology
No. 129, Sec. 3, Sanmin Rd., Taichung, Taiwan 404
*rcchens@ntit.edu.tw*