Soft Computing in Textile Engineering

Description: Soft computing refers to a collection of computational techniques which study, model and analyse complex phenomena. As many textile engineering problems are inherently complex in nature, soft computing techniques have often provided optimum solutions to these cases. Although soft computing has several facets, it mainly revolves around three techniques; artificial neural networks, fuzzy logic and genetic algorithms. The book is divided into five parts, covering the entire process of textile production, from fibre manufacture to garment engineering. These include soft computing techniques in yarn manufacture and modelling, fabric and garment manufacture, textile properties and applications and textile quality evaluation.

- Covers the entire process of textile production, from fibre manufacture to garment engineering including artificial neural networks, fuzzy logic and genetic algorithms
- Examines soft computing techniques in yarn manufacture and modelling, fabric and garment manufacture
- Specifically reviews soft computing in relation to textile properties and applications featuring garment modelling and sewing machines

Contents: Part 1 Introduction to soft computing: Introduction to soft computing techniques: Artificial neural networks, fuzzy logic and genetic algorithm
Artificial neural networks in materials modeling
Performance evaluation and enhancement of artificial neural network in prediction modeling
Yarn engineering using artificial neural network
Soft computing applications in knitting technology
Modelling nonwovens using artificial neural networks. Part 4 Soft computing for textile properties and applications: Garment modelling by fuzzy logic
Soft computing applications for sewing machines
Artificial neural network modeling for prediction of thermal transmission properties of woven fabrics. Part 5 Soft computing in textile quality evaluation: Fuzzy decision making and its applications in cotton fibre grading
Silk cocoon grading by fuzzy expert systems
Artificial neural network applications in textile composites
Modelling the fabric tearing process
Textile quality evaluation by image processing and soft computing techniques.

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