Mathematics and Its Applications

Yurij Kharin

**Robustness
in Statistical
Pattern Recognition**

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Robustness in Statistical Pattern Recognition

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This monograph is devoted to problems of robust (stable) statistical pattern recognition.

Experimental data to be classified usually deviate from assumed hypothetical probability models of the data. In such cases traditional decision rules constructed by means of the classical pattern recognition theory based on a fixed hypothetical model of the data often become non-stable, and the classification risk increases non-controllably. The book concentrates on three main problems: robustness evaluation for classical decision rules in the presence of distortion; estimation of critical levels of distortions for given values of the robustness factor; and the construction of robust decision rules with stable classification risk regarding certain types of distortions. Theoretical results are illustrated by computer modelling and by application to medical diagnostics.

Audience

This volume is primarily intended for mathematicians, statisticians, and engineers in applied mathematics, computer science and cybernetics. It is also recommended as a textbook for a one-semester course for advanced undergraduate and graduate students training in the indicated fields.

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