

Contents :

Part I — Identification

1. Introduction to Identification

- Where are models needed?
- What kinds of models are there?
- Identification versus first-principles modelling
- Steps of identification
- Outline of the book

2. Linear Regression

- Linear systems
- Method of least squares
- Derivation
- Algorithm
- Matrix representation
- Properties
- Recursive least-squares method
- Derivation
- Algorithm
- A posteriori prediction error
- Recursive least squares with exponential forgetting

3. Linear Dynamic Systems

4. Nonlinear Systems

5. Nonlinear Dynamic Structures

6. Estimation of Parameters

The first six chapters constitute the book's identification section, covering experimental process modelling, linear and nonlinear models, recursive estimation and parameter estimation.

Part II — Control

7. Predictive Control

8. Multivariable Systems

9. Time-Varying and Nonlinear Systems

These chapters cover model-based predictive control, **generalized predictive control (GPC)**, multivariable systems and control of time-varying/nonlinear processes.

Part III — Appendices

Appendix A — A State-Space Representation

Appendix B — Fluidized Bed Combustion

Then:

- **Bibliography**
- **Index**