

Sensor and Data Fusion: A Tool for Information Assessment and Decision Making (SPIE Press Monograph Vol. PM138SC)

Lawrence Klein

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This book describes the benefits of sensor fusion as illustrated by considering the characteristics of infrared, microwave, and millimeter-wave sensors, including the influence of the atmosphere on their performance, sensor system application scenarios that may limit sensor size but still require high resolution data, and the attributes of data fusion architectures and algorithms. The data fusion algorithms discussed in detail include classical inference, Bayesian inference, Dempster-Shafer evidential theory, artificial neural networks, voting logic as derived from Boolean algebra expressions, fuzzy logic, and detection and tracking of objects using only passively acquired data. A summary is presented of the information required to implement each of the data fusion algorithms discussed.

Weather forecasting, Earth resource surveys that use remote sensing, vehicular traffic management, target classification and tracking, military and homeland defense, and battlefield assessment are some of the applications that will benefit from the discussions of signature-generation phenomena, sensor fusion architectures, and data fusion algorithms provided in this text.

Contents

- List of Figures
- List of Tables
- Preface
- Introduction
- Multiple Sensor System Applications, Benefits, and Design Considerations
- Data Fusion Algorithms and Architectures
- Classical Inference
- Bayesian Inference
- Dempster-Shafer Evidential Theory
- Artificial Neural Networks
- Voting Logic Fusion
- Fuzzy Logic and Fuzzy Neural Networks
- Passive Data Association Techniques for Unambiguous Location of Targets
- Retrospective Comments
- Appendix A: Planck Radiation Law and Radiative Transfer
- Appendix B: Voting Fusion with Nested Confidence Levels
- Index



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