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Many Criteria Decision Making in Control and Systems Design

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Design problems arising in control and systems can often be conveniently formulated as multi-criteria decision-making problems. However, these often comprise a relatively large number of criteria. Through close association with designers in industry a range of machine learning tools and associated techniques have been devised to address the special requirements of *many*-criteria decision-making. These include visualisation and analysis tools to aid the identification of features such as “hot-spots” and non-competing criteria, preference articulation techniques to assist in interrogating the search region of interest and methods to address the special computational demands of these problems. Test problems and real design exercises will demonstrate these approaches.

Bio



Peter Fleming is Chair of Industrial Systems and Control in the Department of Automatic Control and Systems Engineering and Director of the Rolls-Royce University Technology Centre for Control and Systems Engineering at the University of Sheffield, UK.

His control and systems engineering research interests include control system design, health monitoring, multi-criteria decision-making, optimisation and scheduling, grid computing and real-time control and instrumentation. He has over 350 research publications, including six books, and his research interests have led to the development of close links with a variety of industries in sectors such as aerospace, power generation, food processing, pharmaceuticals and manufacturing.

He is a Fellow of the Royal Academy of Engineering, a Fellow of the Institution of Electrical Engineers, a Fellow of the Institute of Measurement and Control, former Vice-President of the International Federation of Automatic Control and is Editor-in-Chief of *International Journal of Systems Science*.