Design of Embedded Real-time Systems: Developing a Method for Practical Software Engineering

The methodological issues and practical problems in development and industrial use of a theory-based design method for embedded, real-time systems are discussed. The method has been used for several years in a number of smaller industries that develop both electronics and software for a professional market. The design is expressed in a notation for communicating sequential processes, while data types and operations are expressed in a notation built on mathematical set theory. The authors present an order in which to use the notations, a technique for deriving states and operations, and a method to provide systematic checks of a design with respect to system requirements.