Fuzzy Control for Temperature of the Driver Seat in a Car

Dan Mihai
University of Craiova, Dep. for Eng. in Electrom., Environ. and Ind. Informatics, Craiova, Romania,
dmihai@em.ucv.ro

Abstract — Several fuzzy control solutions exist in automotive, including the air temperature control. The study is focused on a temperature-controlled car seat solution, less considered in literature and by manufacturing companies. The fuzzy approach for the controller ensures a high robustness of the solution for a large variety of operational conditions and parameters of the systems. First, an experimental platform was designed for the identification of the thermal behavior of the seat. Several microcontrollers were put into operation for a control cycle and for data acquisition. Then a training stage for an artificial neural network was designed in order to generate a fuzzy model for the thermal behavior of the seat. Finally, a fuzzy controller was added in a global model and its validity has been checked using a simulated model. The design and the experiments were focused on the seat back of the driver for a device already equipped with a resistive heater. Specific programs were realized for the platform control using a modern integrated development environment based on graphical programming, virtual instrumentation and real-time code generation. The study proves also that even in the fuzzy design, stated as simple and fast, a complex systemic approach is a metric of the validity and of the robustness of the solution.