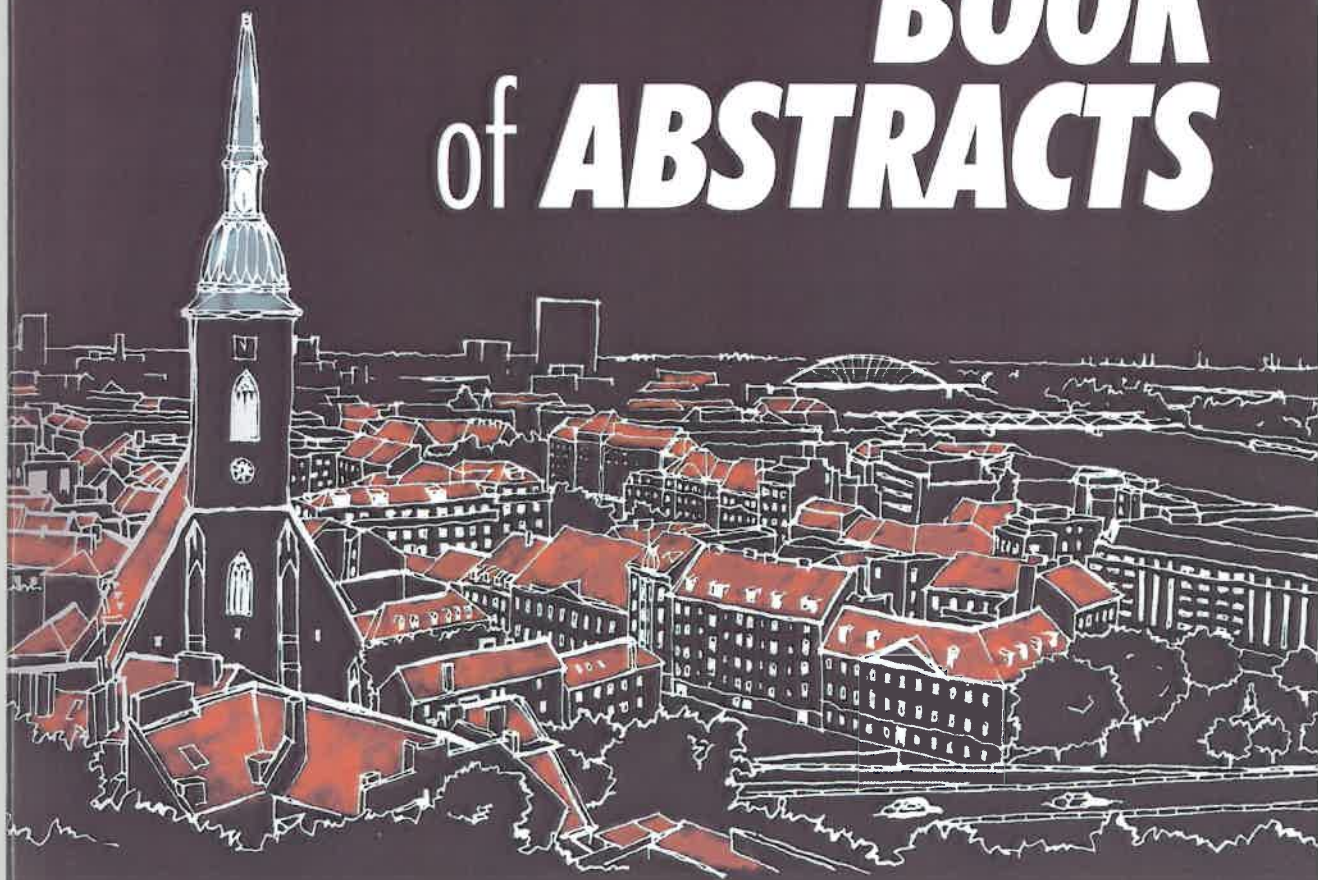


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**BOOK**  
of **ABSTRACTS**



effectiveness and efficiency. In this contribution the filter is used as a state observer to estimate the velocity of a stimulus-responsive polymerfibre actuator in the proposed laboratory experiment. Besides the theoretical aspects of the discrete Kalman filter algorithm, a step-by-step development for its implementation is presented. The proposed structure is general and can be used as a basic frame for research in the context of control and signal processing. In this sense, this contribution proposes a better understanding of the role of integrating teaching and research in education.

17:00-17:20

WeB2.4

***An Experience of Using LMI Technique in Control Education***

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The LMI technique is very popular in modern control theory and applications due to powerful MATLAB-based LMI solvers and efficient interfaces provided by YALMIP package. This motivates wide application of this technique in control education. Nowadays, there exist good textbooks on the subject written for the graduate level but, in authors' opinion, a short course is needed for the undergraduate level. This course is preceded by the basic course on control theory. In this paper, the authors' experience of developing a short course is described. The sketch and most important issues of this course are also presented.

17:20-17:40

WeB2.5

***Prototyping Small Robots for Junior Competitions: MicroFactory Case Study***

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In this paper it is discussed the proposal of a small robot prototype to be applied in the MicroFactory competition, a downsized version of the Robot@Factory competition. The MicroFactory is intended to help junior competitors to make the transition from the Junior Leagues to the senior competition Robot@Factory. The Robot@Factory competition takes place in an emulated factory plant, where Automatic Guided Vehicles (AGVs) must cooperate to perform tasks. To accomplish their goals the AGVs must deal with localization, navigation, scheduling and cooperation problems, that must be solved autonomously.