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SPECIAL ISSUE ON:

Membership-Function-Dependent Analysis and Design for Fuzzy-Model-Based Control Systems and their Applications

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Fuzzy-model-based control has been a promising research area since 1990's. It has attracted enormous research efforts from fuzzy control community leading to fruitful outcomes covering a wide range of topics including system analysis (stability, performance, robustness), control methodologies and applications.

Membership functions in fuzzy model and fuzzy controller play a crucial role in capturing the knowledge of modeling/control strategy. One of the long-standing fundamental issues, leading to conservativeness of analysis results and restriction of design, is that most of the developed analysis tools are of membership function independent.

Membership-function-dependent analysis is a new sub-field of research for fuzzy-model-based control systems and offers a novel technique of treatments. See "H.K. Lam, "A review on stability analysis of continuous-time fuzzy-model-based control systems: from membership-function-independent to membership-function-dependent analysis," *Engineering Applications of Artificial Intelligence*, vol. 67, pp. 390-408, Jan. 2018" for further information. This emerging research topic is still in its early stages of development and there remains plenty of scope to address many interesting issues. This Special Issue will shed light on membership-function-dependent analysis and promote its development.

The accepted topics cover a broad range of research on the **membership-function-dependent** analysis and design issues of fuzzy-model-based control systems. The solicited contributions involve the following topics using **membership-function-dependent techniques** under the fuzzy-model-based framework (but not limited to):

Topics of interest:

- Stability/performance/robustness analysis
- Design of fuzzy controller T-S fuzzy-model-based control systems
- Fuzzy-model-based control methodology such as adaptive control, dynamic feedback control, output feedback control, optimal control, robust control, sliding mode control, switching control, etc.

- Polynomial fuzzy-model-based control systems
- Fuzzy-model-based control systems with mismatched premise such as event-triggered control system, hybrid control systems, networked-control systems, observer-based control systems, sampled-data systems, time-delay control systems, etc.
- Industrial applications of fuzzy-model-based control systems

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