

Sliding Mode Control and its Integration with Soft Computing Methodologies

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Sliding-mode control (SMC) has been studied extensively for over 50 years and widely used in practical applications due to its simplicity and robustness against parameter variations and disturbances. Despite the extensive research activities carried out, the key technical problems associated with SMC remain as challenging research questions due to demands for new industrial applications and technological advances. In this respect, soft computing (SC) is a rather recent development in intelligent systems which has provided alternative means for adaptive learning and control to overcome the key SMC technical problems. Substantial efforts in integration of SMC with SC have been placed in recent years with various successes. This talk starts with an introduction to the theories of Variable Structures Systems and Sliding Mode Control and some early applications are reviewed. The state of the art in the integration of SC methodologies with SMC is then presented and specific examples are given. The talk concludes by the examination of key technical research issues and future perspectives.