

<<复杂系统暨鲁棒控制的理论和应用>>

图书基本信息

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## 内容概要

the japan-china joint workshop on control was initiated in the august of 2004. the first and second joint workshops were held in beijing and harbin of china, respectively. the third joint workshop moved to japan and was held on the 18th of august, 2009 in fukuoka international conference center, as a part of sice annual conference of 2009. the third joint workshop was co-sponsored by the control division of society of instrument and control engineers, japan (sice) and the technical committee on control theory of chinese association of automation, china (caa).

this joint workshop provides a forum for the scientists and engineers from both japan and china, who are active in the field of control engineering, to present their most recent research outcomes and to exchange as well as to share their visions, ideas on control engineering. the focus of the third joint workshop is on complex systems and robust control. we are privileged that many world famous scholars from both sides took part in this workshop and delivered four keynote speeches. after a full day active discussion, all participants felt that the presentations in the workshop were both interesting and inspiring. the publication of a book of selected papers from this joint workshop will undoubtedly contribute to the control community of the world. so, the steering committee decided to publish this book.

this book is organized as two parts: one on complex systems and another on robust control.

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书籍目录

- part i theory and applications of complex systems  
towards a common principle of biological control -- how control weaves the string of life  
hidenori kimura<sup>1</sup>, shingo shimoda<sup>1</sup>, lu gaohuai and reiko j. tanaka<sup>2</sup>  
target localization and tracking with motion sensors  
daizhan cheng<sup>x</sup>, bijoy k. ghosh<sup>2</sup> and xiaoming hus  
network failure locating via end-to-end verification  
daizhan cheng<sup>1</sup> and yutaka takahashi<sup>2</sup>  
an algebraic solution method of the hamilton-jacobi equation  
toshiyuki ohtsuka  
stochastic optimal control for a class of manufacturing systems based on event-based optimization  
yanjia zhao, qianchuan zhao and xiaohong guan  
computing frequency response gain of controlled spatio-temporal systems  
hisaya fujioka  
stability analysis of adrc for nonlinear systems with unknown dynamics and disturbances  
wenchao xue and yi huang  
nonlinear output feedback control for saturated systems and its application  
daisuke akasaka and kang-zhi liu  
estimation of liss properties via a quadratic form liss-lyapunov function  
shengyu wu and shengwei mei  
torque balancing for multi-cylinder si engines and its experimental validation  
po li and tielong shen  
experimental validation of robustness of individual air-fuel ratio control algorithms  
yinhua liu<sup>1</sup>, tielong shen<sup>1</sup>, di lu<sup>2</sup>, kenji suzuki<sup>3</sup> and kota sara<sup>3</sup>  
on energy-based control for underactuated mechanical systems  
xin xin  
passivity based bilateral control for double-screw-drive forceps teleoperation system with constant time delay  
chiharu ishi<sup>1</sup>, kosuke kobayashi<sup>2</sup>, yusuke kamei<sup>3</sup>, yosuke nishitani<sup>4</sup> and hirosi hashimoto<sup>5</sup>  
identification of respiratory system considering hysteresis of pulmonary elastance  
shunshoku kanae<sup>1</sup>, zi-jiang yang<sup>2</sup> and kiyoshi wada<sup>3</sup>  
part ii theory and applications of robust control  
neo-robust control theory -- beyond the small-gain and passivity paradigms

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kang-zhi liu

robust output feedback control of hagg system in gold strip mill  
with delayed measurement

xin li, xiaohong jiao and xiaofei liu

a robust adaptive ha control method for robot manipulators with  
input nonlinearities

kazuya sato<sup>1</sup>, takanori nakashima<sup>1</sup> and kazuhiko tsuruta<sup>2</sup>

delay-dependent robust stability criteria for systems with  
interval time-varying delay

tao zhang and guokai xu

output feedback h<sub>∞</sub> control combining moving horizon scheme for  
active suspension based on lmi

juan wang and haiying du

章节摘录

版权页：插图：2 Control as a transdisciplinary principle Control engineering was born at almost the same time as modern technology was born in the era of Industrial Revolution . So , it is one of the oldest disciplines of engineering , which is consistent with saying “ no machine works without control ” . Since then , control engineering has been developed in pace with the progress of modern technology and now it reaches a certain level of maturity on which contemporary technology seriously depends , as we notice . A salient characteristic feature of control engineering lies in its universality in the sense that it is used commonly in almost all areas of engineering . Engineering disciplines are divided into several categories based on the types of energy resources they use ; electrical , mechanical , chemical and SO on . Control engineering is out of this categorization . It is used indispensably in these fields and sometimes embedded naturally in these disciplines . We find many other such disciplines , apart from control engineering , namely,systems engineering , network engineering , optimization , design engineering , human / machine interface , reliability engineering , and SO on . Now , it is natural to divide engineering disciplines into two categories : The one includes those engineering based essentially on the natural sciences whose objectives are to exploit the potentials of Nature for the use of human being , and the other includes those that do not directly related to the Nature , rather related to the artifacts , society and humans . The disciplines included in the former category tend to concentrate on refining each component of systems and promote each specific technology,SO that further ramifications take place . On the other hand , the disciplines in the latter category tend to integrate different disciplines to challenge the problems . We may call the engineering fields contained in the first category applied engineering , while those in the second category pure engineering . The names come from the fact that the disciplines in the first category are essentially regarded as applications of natural sciences , while those in the second category are independent from natural science and are closed within the engineering world .

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