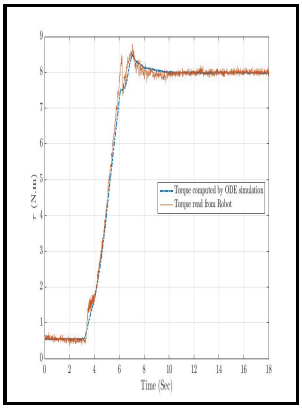
Adaptive control, non-linear systems and robotics

John Wiley - Adaptive nonlinear robust control of an underactuated micro UAV



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Adaptive Force/Position Control Law of Nonlinear Robotic System

For the position tracking, we propose the backstepping controller. This work was supported in part by the NSF under grants DMS-0203387 and ECS-0400413, and in part by the Air Force Research Laboratory under grant FA8651-05-C-0110. Such control scheme with its structure unchanged is also applicable to the systems free from state constraints; 2 the undesirable feasibility conditions on virtual control laws commonly involved in most existing works are completely eliminated; and 3 the utilization of NTF-based DSC and upper bound estimation technique not only avoids the explosion of complexity problem in traditional backstepping design, but also allows a structurally simple and computationally inexpensive control scheme to be developed, in which only one single parameter updating is needed, significantly reducing the design complexity and online computation.

Multiform Adaptive Robot Skill Learning From Humans

The objective is to learn and apply adaptive control theory to some advanced application examples such as process control and power systems. Finally, the control of uncertain single-link robotic manipulator demonstrates the application of design scheme. Dixon , , Springer, 2018.

Multiform Adaptive Robot Skill Learning From Humans

Cite this article Chen, C. Control 59 7 , 1887—1892 2014 This work was supported by the National Natural Science Foundation of China under Grants 60974047 and U1134004, Natural Science Foundation of Guangdong Province S2012010008967 and Science Fund for Distinguished Young Scholars S20120011437, 2011 Zhujiang New Star, the Ministry of education of New Century Excellent Talent under Grant NCET-12-0637, the 973 Program of China under Grant 2011CB013104 and the Doctoral Fund of Ministry of Education of China under Grant 20124420130001, and by University of Macau Multiyear Research Grants. Meanwhile, technologies such as robot learning from demonstration have enabled humans to intuitively train robots.

Adaptive Systems and Control

Correspondingly, a distinctive analysis pattern is implemented for the closed-loop performance, due to the coupling of the dynamic-gain compensation mechanism and the event-triggering mechanism.

Adaptive control

The linear output feedback controller was constructed by using the high-gain observer Gauthier et al.

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