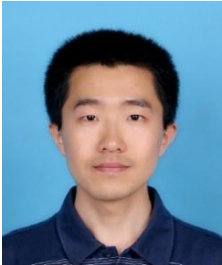


# Curriculum Vitae

## Wenxiao Zhao

### 1 Personal Information



**Wenxiao Zhao**, Male

PhD, Associate Professor with Key Laboratory of Systems and Control, Institute of Systems Science, Academy of Mathematics and Systems Science (AMSS), Chinese Academy of Sciences (CAS), P. R. China.

**Date and Place of Birth:** Born on March 3, 1981 in Qingdao, Shandong Province, P. R. China.

**Correspondence Address:** Siyuan Building, Zhongguancundonglu 55, Beijing 100190, P. R. China.

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### 2 Education and Professional Experience

- 04/2015-present, Associate Professor, AMSS, CAS.
- 07/2010-03/2015, Assistant Professor, AMSS, CAS.
- 09/2008-06/2009, Visiting Fellow, School of Computing and Mathematics, University of Western Sydney, Australia.
- 07/2008-06/2010, Postdoctoral Research Fellow, Department of Automation, Tsinghua University, Beijing, China.
- 09/2003-07/2008, PhD, Key Laboratory of Systems and Control, Institute of Systems Science, Chinese Academy of Sciences, Beijing, China.
- 09/1999-07/2003, Bachelor of Science, School of Mathematics, Shandong University, Jinan, China.

### 3 Research Interests

Identification and adaptive control of stochastic nonlinear systems and related topics in signal processing, system biology, etc.

### 4 Projects

- Project funded by National Natural Science Foundation of China: *Some Further Problems In Identification of Stochastic Dynamic Systems*, Grant No. 61573345, 01/2016-12/2019, Principal Investigator.
- National Basic Research Program of China (973 Project) funded by Ministry of Science and Technology of China: *Structure identification and parameter estimation of complicated systems*, Grant No. 2014CB845301, 01/2014-12/2018, Major Team Member.

- Project funded by National Natural Science Foundation of China: *Recursive identification of stochastic nonlinear systems and related topics*, Grant No. 61273193, 01/2013-12/2016, Co-Investigator.
- Project funded by National Natural Science Foundation of China: *Identification of stochastic nonlinear systems and modeling of genetic regulatory networks*, Grant No. 61104052, 01/2012-12/2014, Principal Investigator.
- Project funded by Ministry of Education of China: *Identification of a class of large-scale networked systems with power-law constraint*, Grant No. 20090450029, 07/2009-07/2010, Principal Investigator.

## 5 Overview of My Research

My research interests focus on the identification and adaptive control of stochastic nonlinear systems and related topics. Stochastic nonlinear systems find extensive applications in systems and control, signal processing as well as related interdisciplinary research areas and thus their identification and control issues become active topics in these communities. Currently, much attention is paid on the identification and control of the Hammerstein system, the Wiener system, the nonlinear ARX system, etc., since these systems are with special structures and with strong application backgrounds in engineering practice. Meanwhile, for online situation, recursive algorithms for identification of these systems are preferable since when new data are available, with recursive algorithms we only need to update the estimates with innovations and do not need to compute estimates with the whole data set.

My research includes the following items: (1) A unified framework for identification of Wiener, Hammerstein, and nonlinear ARX systems; (2) A recursive local linear estimator for identification of nonlinear nonparametric systems with its strong consistency as well as mean square error properties; (3) Order estimation and variable selection of nonlinear nonparametric systems; (4) other research including adaptive tracking of Hammerstein systems, recursive order estimation of ARMA/ARMAX systems, recursive identification of piecewise affine ARX systems, convergence analysis of distributed randomized PageRank algorithms, etc.

## 6 List of Publications

### Book:

Han-Fu Chen and **Wenxiao Zhao**, *Recursive Identification and Parameter Estimation*, CRC Press, US, 2014.

### Journal Papers:

- [J1] **Wenxiao Zhao**, Han-Fu Chen, et al, Kernel based local order estimation of nonlinear nonparametric systems, *Automatica*, Vol. 51, pp. 243-254, 2015 (**Regular Paper**).
- [J2] **Wenxiao Zhao** and Han-Fu Chen, Recursive Identification of Stochastic

- Nonlinear Systems: from Individual Systems to a General Framework (in Chinese), *Control Theory and Its Applications*, Vol. 31, pp. 962-973, 2014.
- [J3] Er-Wei Bai, Kang Li, **Wenxiao Zhao** and Weiyu Xu, Kernel based approaches to local nonlinear non-parametric variable selection, *Automatica*, Vol. 50, pp. 100-113, 2014 (**Regular Paper**).
- [J4] Le Yi Wang and **Wenxiao Zhao**, System identification: new paradigms, challenges, and opportunities (in Chinese), *Acta Automatica Sinica*, Vol. 39, pp. 933-942, 2013.
- [J5] **Wenxiao Zhao**, Wei Xing Zheng, et al, A recursive local linear estimator for identification of nonlinear ARX systems: asymptotical convergence and applications, *IEEE Trans. Automatic Control*, Vol. 58, pp. 3054-3069, 2013 (**Full Paper**).
- [J6] **Wenxiao Zhao**, Han-Fu Chen and Haitao Fang, Convergence of distributed randomized PageRank algorithms, *IEEE Trans. Automatic Control*, Vol. 58, pp. 3255-3259, 2013 (**Technical Note**).
- [J7] **Wenxiao Zhao** and Han-Fu Chen, Identification of Wiener, Hammerstein, and NARX systems as Markov chains with improved estimates for their nonlinearities, *Systems and Control Letters*, Vol. 61, pp. 1175-1186, 2012.
- [J8] **Wenxiao Zhao** and Han-Fu Chen, Markov chain approach to identifying Wiener systems, *Science China: Information Science*, Vol. 55, pp. 1201-1217, 2012.
- [J9] **Wenxiao Zhao** and Tong Zhou, Weighted least squares based recursive parametric identification of the submodels of a PWARX system, *Automatica*, Vol. 48, pp. 1190-1196, 2012 (**Brief Paper**).
- [J10] **Wenxiao Zhao**, Han-Fu Chen and Tong Zhou, New results on recursive identification of NARX systems, *Int. J. Adaptive Control and Signal Processing*, Vol. 25, pp. 855-875, 2011.
- [J11] Han-Fu Chen and **Wenxiao Zhao**, Identification of stochastic nonlinear systems (in Chinese), *J. Systems Science and Mathematical Sciences*, Vol. 31, pp. 1019-1044, 2011.
- [J12] **Wenxiao Zhao**, Han-Fu Chen and Wei Xing Zheng, Recursive identification for nonlinear ARX systems based on stochastic approximation algorithm, *IEEE Trans. Automatic Control*, Vol. 55, No. 6, pp. 1287-1299, 2010 (**Full Paper**).
- [J13] **Wenxiao Zhao**, Parametric identification of Hammerstein systems with consistency results using stochastic inputs, *IEEE Trans. Automatic Control*, Vol. 55, pp. 474-480, 2010 (**Technical Note**).
- [J14] Han-Fu Chen and **Wenxiao Zhao**, New method of order estimation for ARMA/ARMAX processes, *SIAM J. Control and Optimization*, Vol. 48, No. 6, pp. 4157-4176, 2010.
- [J15] **Wenxiao Zhao** and Han-Fu Chen, Adaptive tracking and recursive identification for Hammerstein systems, *Automatica*, Vol. 45, pp. 2773-2783, 2009 (**Regular Paper**).
- [J16] **Wenxiao Zhao** and Haitao Fang, Comments on “Identification of

Hammerstein nonlinear ARMAX systems”, *Automatica*, Vol. 43, pp. 1477-1478, 2007 (**Correspondence Item**).

- [J17] **Wenxiao Zhao** and Han-Fu Chen, Recursive identification for Hammerstein systems with ARX subsystem, *IEEE Trans. Automatic Control*, Vol. 51, No. 12, pp. 1966-1974, 2006 (**Technical Note**).

#### **Conference Papers:**

- [C1] **Wenxiao Zhao**, Han-Fu Chen, Roberto Tempo and Fabrizio Dabbene, Recursive Identification of Nonparametric Nonlinear Systems With Binary-Valued Output Observations, accepted by 2015 IEEE Conference on Decision and Control, Osaka, Japan, December 2015.
- [C2] Er-Wei Bai, Kang Li, and **Wenxiao Zhao**, On variable selection of a nonlinear non-parametric system with a limited data set: a stepwise algorithm, *Proceedings of 19<sup>th</sup> IFAC World Congress*, Cape Town, South Africa, 2014.
- [C3] **Wenxiao Zhao**, Han-Fu Chen, Er-Wei Bai and Kang Li, A local information criterion for order identification of nonlinear ARX system, *Proceedings of 9<sup>th</sup> Asian Control Conference*, Istanbul, Turkey, 2013.
- [C4] **Wenxiao Zhao** and Han-Fu Chen, Identification of stochastic nonlinear systems: strongly consistent estimates for function values, gradients and system orders, *Proceedings of 32<sup>nd</sup> China Control Conference*, pp. 2016-2021, Xi’an, China, 2013.
- [C5] **Wenxiao Zhao**, Wei Xing Zheng and Er-Wei Bai, A recursive local linear estimator for identification of nonlinear ARX systems, *Proceedings of 16<sup>th</sup> IFAC Symposium on System Identification*, pp. 1517-1522, Brussels, Belgium, 2012.
- [C6] **Wenxiao Zhao** and Han-Fu Chen, Stochastic approximation based PCA and its application to identification of EIV systems, *Proceedings of 10<sup>th</sup> World Congress on Intelligent Control and Automation*, pp. 3276-3280, Beijing, China, 2012.
- [C7] **Wenxiao Zhao** and Han-Fu Chen, Markov chain approach to identification of Wiener, Hammerstein and NARX systems, *Proceedings of 18<sup>th</sup> IFAC World Congress*, pp. 13936-13941, Milan, Italy, 2011.
- [C8] Han-Fu Chen and **Wenxiao Zhao**, Identification of both coefficients and orders for ARMAX systems, *Proceedings of 48<sup>th</sup> IEEE Control and Decision Conference*, pp. 7250-7255, Shanghai, China, 2009.
- [C9] **Wenxiao Zhao** and Wei Xing Zheng, Nonparametric algorithms for identification of nonlinear autoregressive systems with exogenous inputs, *Proceedings of 15<sup>th</sup> IFAC Symposium on System Identification*, pp. 1609-1614, Saint Marlo, France, 2009.
- [C10] **Wenxiao Zhao** and Han-Fu Chen, Adaptive tracking and recursive identification for a class of Hammerstein systems, *Proceedings of 17<sup>th</sup> IFAC World Congress*, pp. 7871-7876, Seoul, Korea, 2008.
- [C11] **Wenxiao Zhao**, Identification of Hammerstein systems with ELS

algorithms, *Proceedings of 26<sup>th</sup> China Control Conference*, pp. 241-245, 2007.

## **7 Professional Activities**

- 2015.05-present, Member of *IEEE CSS Conference Editorial Board*;
- Publicity Chair of *2015 IFAC Symposium on System Identification*;
- 2013-present, General Secretary of *IEEE Control Systems Society Beijing Chapter*;
- 2013-present, Associate Editor of *Journal of Systems Science and Complexity (in Chinese)*;
- 2011-present, Member of the *Program Committee of China Control Conference*;
- Reviewer of the following journals: *IEEE Trans. Automatic Control*, *Automatica*, *Systems and Control Letters*, *Control Engineering Practice*, *Asian Journal of Control*, *Acta Automatica Sinica*, *Control Theory and Its Applications*;

## **8 Honors and Awards**

- 03/2015, *Automatica* Outstanding Reviewer for 2013-2014;
- 07/2013, *Automatica* Outstanding Reviewer for 2011-2012;
- 07/2013, Guan Zhao-Zhi Award (Best Paper Award), 32<sup>nd</sup> China Control Conference, Xi'an, China;
- 07/2012, Best Theoretical Paper Award, 10<sup>th</sup> World Congress on Intelligent Control and Automation, Beijing, China;
- 09/2007, President Award, Academy of Mathematics and Systems Science, Chinese Academy of Sciences;

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