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NAME	Yahao Chen
CONTACT INFORMATION	Affiliation: Centrale Nantes, LS2N UMR CNRS 6004, France Address: 1 Rue de la Noe, 44300 Nantes Phone: +33(0) 768334227 Emails: yahao.chen@ls2n.fr Web: https://chenyahao.github.io/ https://researchgate.net/profile/Yahao-Chen
RESEARCH INTERESTS	Differential-algebraic equations (DAEs) and hybrid systems. Nonlinear control theory: geometric and algebraic methods. Switching systems and time-delay systems.
PROFESSIONAL EXPERIENCE	Laboratoire des Sciences du Numerique de Nantes (LS2N), France Postdoctoral Research Fellow, (Systems and Control, January 2022-Now) <ul style="list-style-type: none">• Project: “<i>Input observation of nonlinear time-delayed systems and its application to torque estimations of electric motors</i>” (PI: M.Ghanes, J. Barbot), Funded by Ecole Centrale de Nantes and Renault France. University of Groningen (RUG), the Netherlands Postdoctoral Researcher (Applied Mathematics, October 2019-November 2021) <ul style="list-style-type: none">• Project: “<i>Analysis and control of switched differential algebraic equations</i>” (PI: S. Trenn), NWO Vidi grant 639.032.733
EDUCATION	Institut National des Sciences Appliquees (INSA) de Rouen, France PhD (Applied Mathematics, October 2015-June 2019) <ul style="list-style-type: none">• Dissertation: “<i>Geometric analysis of differential-algebraic equation control systems: linear, nonlinear and linearizable</i>” Northeastern University (NEU), China MSc (Control Science and Engineering, October 2012-July 2015) <ul style="list-style-type: none">• Dissertation: “<i>Anti-windup Compensator for Control Systems Subject to Actuator Saturation</i>” Shenyang University of Technology, China BSc (Measurement and Control Technology and Instrument, July 2012)
JOURNAL PUBLICATIONS	Y. Chen*, J. Barbot and M. Ghanes (2022), Implicit function theorem for nonlinear time-delay systems with algebraic constraints, 8 pages double columns, submitted to <i>IEEE Transactions on Automatic Control</i> , available from the website of the authors. Y. Chen* and S. Trenn (2022), On impulse-free solutions and stability of switched nonlinear differential-algebraic equations, 17 pages double columns, submitted to <i>Automatica</i> as a regular paper, available from the website of the authors. Y. Chen*, J. Barbot and M. Ghanes (2022), Strong left-invertibility and strong input-observability of nonlinear time-delay systems, <i>IEEE Control Systems Letters</i> . Y. Chen* and S. Trenn (2022), Impulse-free jump solutions for nonlinear differential-algebraic equations, 17 pages, published in <i>Nonlinear Analysis: Hybrid Systems</i> .

Y. Chen* and W. Respondek (2022), Geometric analysis of nonlinear differential-algebraic equations via nonlinear control theory, 40 pages, published in *Journal of Differential Equations*.

Y. Chen* (2022), Feedback linearization of nonlinear differential-algebraic control systems, 25 pages, published in *International Journal of Robust and Nonlinear Control*.

Y. Chen* and W. Respondek (2021), From Morse triangular form of ODE control systems to feedback canonical form of DAE control systems, 37 pages, published in *Journal of the Franklin Institute*.

Y. Chen*, S. Trenn and W. Respondek (2021), Normal forms and internal regularization of nonlinear differential-algebraic control systems, 23 pages, published in *International Journal of Robust and Nonlinear Control*.

Y. Chen* and W. Respondek (2020), Geometric analysis of differential-algebraic equations via linear control theory, 28 pages, published in *SIAM Journal on Control and Optimization*.

CONFERENCES
PUBLICATIONS

Y. Chen* and S. Trenn (2022), Stability analysis of switched nonlinear differential-algebraic equations via nonlinear Weierstrass form, European Control Conference (ECC).

Y. Chen* and S. Trenn (2021), An approximation for nonlinear differential-algebraic equations via singular perturbation theory, IFAC Conference on Analysis and Design of Hybrid Systems.

Y. Chen* and S. Trenn (2021), The differentiation index of nonlinear differential-algebraic equations versus the relative degree of nonlinear control systems, PAMM, 20(1), e202000162.

Y. Chen* and S. Trenn (2020), On geometric and differentiation index of nonlinear differential-algebraic equations, 24th International Symposium on Mathematical Theory of Networks and Systems (MTNS 2020).

Y. Chen* and W. Respondek (2019), Yahao Chen, Witold Respondek, Internal and External Linearization of Semi-Explicit Differential Algebraic Equations, IFAC Symposium on nonlinear control systems (NOLCOS 2019).

J. Dong, Y. Chen, G.H. Yang (2014), Reliable fuzzy stabilization against sensor faults, 2014 International Conference on Mechatronics and Control (ICMC), pp. 2059-2062. IEEE.

TEACHING
EXPERIENCE

Spring 2021 TA, **Project Systems Theory**, University of Groningen

Winter 2020 Lecturer, **Advanced Systems Theory**, University of Groningen

Spring 2018 TA, **Calculus Differential**, INSA de Rouen

SCIENTIFIC
ACTIVITIES

Reviewer for **Automatica**, **IEEE Transactions on Automatic Control**, **System Control Letters**, **IEEE Control System Letters**, **Nonlinear Analysis: Hybrid Systems**, **International Journal of Robust and Nonlinear Control**, **Linear Algebra and its Applications**.

SELECTED TALKS

11/2022 **Journee Synchronisation and Observation**, CNAM, France.
 10/2022 **Codex Team Seminar**, LS2N-CNRS, France.
 07/2022 **European Control Conference**, Imperial College, UK.
 11/2021 **SCAA Group Seminar**, Bernoulli Institute, University of Groningen, the Netherlands
 08/2021 **Invited Talk at MEC Team**, TU Kaiserslautern, Germany
 08/2021 **International Symposium on Mathematical Theory of Networks and Systems**, Online
 07/2021 **IFAC Conference on Analysis and Design of Hybrid Systems**, Online
 03/2021 **91st GAMM Annual Meeting**, Kassel, Germany
 03/2020 **Benelux Meeting**, Elspeet, The Netherlands
 09/2019 **IFAC Conferences of NOLCOS**, Vienna, Austria
 07/2019 **Invited Talk at Institute for Advanced Study**, Shenzhen University, China

ENGINEERING
PROJECT
EXPERIENCE

2022–Now Torque and position observations for Renault PMSM electrical motor via Dspace experimental platform. (main participate)
 Chair: Prof. Malek Ghanes
 Centrale Nantes and Renault Group, France.
 2013–2014 Research on control algorithms design for Denso 6-Axis robot arm via DENSO experimental platform. (participate)
 PI: Prof. Jiuxiang Dong
 Institute of Navigation and Control Theory, NEU, China.

SKILLS

Languages: English (TOEFL ibt 99), French (TCF B1), Chinese (native).
 Programing: C/C++, Python.
 Others: \LaTeX , Matlab/Simulink, Maple, Mathematica.

REFERENCES

Prof. Jean-Pierre Barbot, ENSEA, Quartz EA 7393 and Centrale Nantes, LS2N UMR CNRS 6004, France, barbot@ensea.fr
Prof. Stephan Trenn, Faculty of Science and Engineering Systems, Control and Applied Analysis, Bernoulli Institute, Nijenborgh 99747 AG Groningen, The Netherlands, s.trenn@rug.nl
Prof. Witold Respondek, Normandie Université, INSA-Rouen, LMI, 76801 Saint-Etienne-du-Rouvray, France, witold.respondek@insa-rouen.fr