NING TIAN

1000 Emery Road, Lawrence, Kansas 66044
(785) 551-9499 ⋄ ning.tian@ku.edu ⋄ http://ningtian.github.io/

EDUCATION

University of Kansas, Lawrence, Kansas — Expected Spring 2020
Ph.D. candidate in Mechanical Engineering, GPA 3.93/4

Northwestern Polytechnical University, Xi'an, China — Awarded 2015
M.S. in Mechanical Engineering, GPA 85.10/100

Northwestern Polytechnical University, Xi'an, China — Awarded 2012
B.S. with high honors in Mechanical Engineering, GPA 85.43/100

RESEARCH EXPERIENCE

Information and Smart Systems Lab, University of Kansas — 2015–Present
Graduate Research Assistant, Supervisor: Dr. Huazhen Fang

- Conduct research on lithium-ion battery management, including battery modeling and identification, state estimation, health-aware battery charging, and thermal management
- Direct lab battery tester operation and oversee around ten students in battery testing

Heat Transfer and Cooling Lab, Northwestern Polytechnical University — 2012–2015
Graduate Research Assistant, Supervisor: Dr. Huiren Zhu

- Investigated impingement cooling at turbine blade trailing edge

Energy Saving and Emission Reduction Lab, Northwestern Polytechnical University — 2011
Research Assistant, funded by National Innovation Experiment Program for Undergraduates

- Evaluated adsorption capability of magnesium-aluminium hydrotalcite for fluoride ion

WORK EXPERIENCE

Combustion Group, ANSYS, Lebanon, New Hampshire — Summer 2019
Software Development Intern (CFD Battery and Electrochemistry), Supervisor: Dr. Genong Li

- Wrote a tutorial for a new ANSYS Fluent battery model feature (microscale battery model)
- Tested ANSYS Fluent battery model identification tool and user-defined battery model
- Performed CFD simulation of thermal field of industrial battery packs using ANSYS Fluent

TEACHING EXPERIENCE

Mechanical Engineering Department, University of Kansas — Fall 2019
Graduate Teaching Assistant for ME320 Dynamics and ME321 Dynamic Simulations

- Support faculty and students (around 90) in ME320 classroom setting
- Co-instruct students (around 90) in ME321 lab setting for dynamic simulation using Adams

JOURNAL PAPERS

J.5 **N. Tian**, H. Fang, J. Chen and Y. Wang, "Nonlinear double-capacitor model for rechargeable batteries: Modeling, identification and validation," submitted to *IEEE Transactions on Control Systems Technology*, under review

J.4 **N. Tian**, H. Fang and Y. Wang, "Real-time optimal lithium-ion battery charging based on explicit model predictive control," submitted to *IEEE Transactions on Industrial Informatics*, under review

J.3 **N. Tian**, Y. Wang, J. Chen and H. Fang, "One-shot parameter identification of an equivalent circuit model for batteries: Methods and validation," submitted to *Journal of Energy Storage*, under review

J.2 **N. Tian**, H. Fang and Y. Wang, "3-D temperature field reconstruction for a lithium-ion battery pack: A distributed Kalman filtering approach," *IEEE Transactions on Control Systems Technology*, vol. 27, no. 2, pp. 847–854, 2019

J.1 H. Fang, **N. Tian**, Y. Wang, M. Zhou and M.A. Haile, "Nonlinear Bayesian estimation: From Kalman filtering to a broader horizon," *IEEE/CAA Journal of Automatica Sinica*, vol. 5, no. 2, pp. 401–417, 2018

CONFERENCE PAPERS

C.8 H. Movahedi, **N. Tian**, H. Fang and R. Rajamani, "Nonlinear observer design and hysteresis compensation for SoC estimation in Li-ion batteries," submitted to *the 2020 American Control Conference*, Denver, USA, 2020

C.7 M. Proctor, **N. Tian** and H. Fang, "Battery state-of-charge estimation based on nonlinear double-capacitor model and extended Kalman filter," accepted by *the 2020 IEEE Annual Green Technologies Conference*, Oklahoma City, USA, 2020

C.6 **N. Tian**, H. Fang and Y. Wang, "Parameter identification of the nonlinear double-capacitor model for lithium-ion batteries: From the Wiener perspective," in *Proceedings of American Control Conference*, Philadelphia, USA, Jul. 10–12, 2019

C.5 **N. Tian**, H. Fang and Y. Wang, "Real-time optimal lithium-ion battery charging based on explicit model predictive control," in *Proceedings of the 28th International Symposium on Industrial Electronics*, Vancouver, Canada, Jun. 12–14, 2019

C.4 **N. Tian**, H. Fang and J. Chen, "A new nonlinear double-capacitor model for rechargeable batteries," in *Proceedings of the 44th Annual Conference of the IEEE Industrial Electronics Society*, Washington D.C., USA, Oct. 21–23, 2018

C.3 **N. Tian**, Y. Wang, J. Chen and H. Fang, "On parameter identification of an equivalent circuit model for lithium-ion batteries," in *Proceedings of IEEE Conference on Control Technology and Applications*, Kohala Coast, HI, USA, Aug. 27–30, 2017

C.2 **N. Tian** and H. Fang, "Distributed Kalman filtering-based three-dimensional temperature field reconstruction for a lithium-ion battery pack," in *Proceedings of American Control Conference*, Seattle, WA, USA, May. 24–26, 2017

C.1 **N. Tian**, H. Zhu and M. Zhang, "Numerical analysis of flow and heat transfer of inclined impingement in the trailing edge of turbine blade," in *International Symposium on Jet Propulsion and Power Engineering*, Beijing, China, Sep. 15–19, 2014

PATENT

N. Tian and H. Zhu, "An inclined impingement cooling channel," Patent No. CN104,265,376B, April 2016 (assigned to Northwestern Polytechnical University, Xi'an, China)

PRESENTATIONS

P.8 "Software development for lithium-ion battery management," scheduled at 2019 URSSI Winter School in Research Software Engineering, University of Washington, Seattle, Dec. 17–19, 2019

P.7 "Advanced lithium-ion battery management," at 2019 American Control Conference, Philadelphia, Jul.11, 2019

P.6 "Parameter identification of the nonlinear double-capacitor model for lithium-ion batteries: From the Wiener perspective," at 2019 American Control Conference, Philadelphia, Jul.10, 2019

P.5 "A new nonlinear double-capacitor model for rechargeable batteries," at 8th Midwest Workshop on Control and Game Theory at Washington University in St. Louis, Apr. 27, 2019

P.4 "A new equivalent circuit model for rechargeable batteries," at 13th Berkeley Energy & Resources Collaborative (BERC) Energy Summit, UC Berkeley, Feb. 21, 2019

P.3 "A new nonlinear double-capacitor model for rechargeable batteries," at 44th Annual Conference of the IEEE Industrial Electronics Society, Washington D.C., Oct. 22, 2018

P.2 "Model predictive control for battery charging," at 1st Model Predictive Control Summer School, University of Wisconsin-Madison, Jul. 28, 2017

P.1 "Distributed Kalman filtering-based three-dimensional temperature field reconstruction for a lithium-ion battery pack," at 2017 American Control Conference, Seattle, Washington, May. 24, 2017

EXTRACURRICULAR EXPERIENCE

Education Volunteer, Lab Outreach at Douglas County Juvenile Detention Center, 2016–Present

Orientation Leader, Summer Orientation at University of Kansas, Summer 2018

Education Volunteer, Engineering Expo and Summer Camp at University of Kansas, 2016

Vice President, Student Branch of Shaanxi Society of Engineering Thermophysics, 2014–2015

Sessional Lecturer, Xi'an Electric Power College, Xi'an, China, Fall 2013

Freshman Mentor, Northwestern Polytechnical University, Xi'an, China, Fall 2011

Volunteer Leader, International Horticultural Exposition, Xi'an, China, July 2011

Education Volunteer, Xinfeng Elementary School, Zhangye, China, July 2009

MEMBERSHIP

IEEE Student Membership 2017–Present

SKILLS

MATLAB, SolidWorks, Adams, ANSYS Fluent, UG, AutoCAD, CSS, HTML, C, Python

AWARDS

Student Travel Award, 2019 URSSI Winter School in Research Software Engineering	2019
Tradition of Excellence Award, University of Kansas	2019
Student Travel Award, 2019 American Control Conference	2019
Student Travel Award, 8th Midwest Workshop on Control and Game Theory	2019
GEA Travel Award, University of Kansas	2018, 2019
Graduate Presentation Travel Award, University of Kansas	2018
Student Travel Award, 1st Model Predictive Control Summer School	2017

SERVICE

Student Liaison for ASME DSCD Energy Systems Technical Committee

- Co-organized Student Career Advising Session at 2019 Dynamic Systems and Control (DSC) Conference in Park City, Utah

Paper Reviewer

- Journal of Control, Automation and Electrical Systems
- IEEE Conference on Decision and Control (2019), American Control Conference (2017, 2019, 2020), Dynamic Systems and Control Conference (2017, 2018), IEEE Conference on Control Technology and Applications (2017, 2018), IEEE International Conference on Control and Automation (2017, 2019)