

CONTACT	Department of Electrical and Computer Engineering Oakland University, Rochester, MI 48309, USA	248-370-4797   <a href="mailto:junchen@oakland.edu">junchen@oakland.edu</a> <a href="http://www.secs.oakland.edu/~junchen">www.secs.oakland.edu/~junchen</a>   <a href="http://jchen2020.net">jchen2020.net</a>
EDUCATION	<b>Ph.D. in Electrical Engineering</b> (minor in CS), Iowa State University, Ames IA, 4.0/4.0 <b>B. S. in Automation</b> , Zhejiang University, Hangzhou China Accomplishment Certificate for Machine Learning, Coursera	12/2014 06/2009 12/2014
RESEARCH INTERESTS	<b>Systems and Control:</b> Model predictive control, optimal control, stochastic processes, event-triggered control <b>Artificial Intelligence:</b> Reinforcement learning, deep learning, time series, generative adversary network <b>Automotive Systems:</b> Autonomous vehicle, electric vehicle, battery control, vehicle dynamics, co-simulation <b>Energy Systems:</b> Hybrid energy systems, renewable energy, power electronic, battery, economic analysis <b>Discrete Event and Hybrid Systems:</b> failure diagnosis and prognosis, resiliency analysis, verification <b>Formal Methods:</b> Model-based verification and validation, statistical verification, linear-time temporal logic	
EMPLOYMENT	<b>Assistant Professor</b> , ECE Department, Oakland University, Rochester MI, USA <b>Senior Control Systems Engineer</b> , General Motors, Milford MI, USA <b>R&amp;D Scientist</b> in <i>Power and Energy Systems</i> , Idaho National Laboratory, ID, USA <b>Summer Intern</b> in <i>Software V&amp;V</i> , General Motors R&D, MI, USA <b>Research Assistant</b> in <i>Stochastic Hybrid Systems</i> , Iowa State University, IA, USA <b>Teaching Assistant</b> in <i>Electrical Engineering</i> , Iowa State University, IA, USA	08/2020–present 01/2017–08/2020 11/2014–12/2016 04/2014–07/2014 01/2011–10/2014 01/2011–12/2013
HONORS AND RECOGNITIONS	<b>Associate Editor</b> , IEEE Conference on Control Technology and Applications <b>Associate Editor</b> , IET Cyber-Systems and Robotics <b>Associate Editor</b> , IFAC International Symposium on Advances in Automotive Control <b>Undergraduate Research Competition Winner</b> (my advisee), ASME ICE Division <b>IEEE Senior Member</b> <b>Associate Editor</b> , IEEE International Conference on Robotics and Automation <b>IEEE Best Paper Award</b> , IEEE Transactions on Automation Science and Engineering <b>Associate Editor</b> , Energy Systems <b>INL Publication Achievement Award</b> , Idaho National Laboratory <b>INL Exceptional Contributions Program Award</b> , Idaho National Laboratory <b>Research Excellence Award</b> , Iowa State University Student Travel Award, American Control Conference Professional Development Grants (PAG), Iowa State University Third Class Scholarship for Undergraduate Student, Zhejiang University <b>Outstanding Student</b> , Zhejiang University	2023–present 2022–present 2022–present 2022 2020 2020 2016 2016–present 2016 2015 & 2016 2014 2014 2014 2008 2008
PUBLICATIONS	(Students under my close supervision are marked in <u>underline</u> ; corresponding author is marked by *)  <b>Patent</b> [4] Min Sun, Yiran Hu, David Edwards, <u>Jun Chen</u> , Insu Chang and Steven Moorman, “ <a href="#">Active Thermal Management System and Method for Flow Control</a> ,” USPTO Application No. 16/551064; filed by GM Global Technology Operations LLC on August 26, 2019, <b>U.S. Patent No. US11312208 B2, April 26, 2022</b> . [3] <u>Jun Chen</u> , Ruixing Long and Yiran Hu, “ <a href="#">Method for Increasing Control Performance of Model Predictive Control Cost Functions</a> ,” USPTO Application No. 16/418658; filed by GM Global Technology Operations LLC on May 21, 2019, <b>U.S. Patent No. US11192561 B2, December 7, 2021</b> .	

- [2] Yiran Hu, David Edwards, Michael Paratore Jr, Min Sun, **Jun Chen**, Eugene Gonze and Sergio Quelhas, “[Method and Apparatus for Control of Propulsion System Warmup Based on Engine Wall Temperature](#),” USPTO Application No. 16/589579; filed by GM Global Technology Operations LLC on October 1, 2019, **U.S. Patent No. 11078825 B2, August 3, 2021.**
- [1] **Jun Chen**, David Edwards, Yiran Hu, Min Sun, Adam J. Heinzen and Michael A. Smith, “[Method and System for Determining Thermal State](#),” USPTO Application No. 16/431199, filed by GM Global Technology Operations LLC on June 4, 2019, **U.S. Patent No. 10995688 B2, May 4, 2021.**

#### Textbook

- [1] **Jun Chen**, “[An Introductory Course to Model Predictive Control](#),” Fall 2022.

#### Book Chapter

- [1] Mariam Ibrahim, **Jun Chen** and Ratnesh Kumar, “[Quantification of Centralized/Distributed Secrecy in Stochastic Discrete Event Systems](#),” in *Recent Advances in Systems Safety and Security*, Editors: Emil Pricop and Grigore Stamatescu, Springer, May 2016, ISBN: 978-3-319-32523-1.

#### Journal Articles

- [22] **Jun Chen\***, Zhaodong Zhou, Ziwei Zhou, Xia Wang and Boryann Liaw, “[Impact of Battery Cell Imbalance on Electric Vehicle Range](#),” *Green Energy and Intelligent Transportation* (Accepted August 2022)
- [21] **Jun Chen\*** and Junhui Zhao, “Generating Synthetic Wind Speed Scenarios using Artificial Neural Networks for Probabilistic Analysis of Hybrid Energy Systems,” *International Journal of Modelling, Identification and Control*, (Accepted for publication)
- [20] **Jun Chen\*** and Ratnesh Kumar, “[Stochastic Failure Prognosis of Discrete Event Systems](#),” *IEEE Transactions on Automatic Control*, volume 67, number 10, pages 5487–5492, October 2022.
- [19] Xuan Xie, Guojiang Xiong, **Jun Chen** and Jing Zhang, “[Universal Transparent Artificial Neural Network Based Fault Section Diagnosis Models for Power Systems](#),” *Advanced Theory and Simulations*, volume 5, number 4, pages 1–12, April 2022.
- [18] Guojiang Xiong, Xufeng Yuan, Ali Wagdy Mohamed, **Jun Chen** and Jing Zhang, “[Improved Binary Gaining-sharing Knowledge based Algorithm with Mutation for Fault Section Location in Distribution Networks](#),” *Journal of Computational Design and Engineering*, volume 9, number 2, pages 393–405, April 2022.
- [17] **Jun Chen\*** and Ramesh S, “[Model-based Validation of Diagnostic Software with Application in Automotive Systems](#),” *IET Cyber-Systems and Robotics*, volume 3, number 2, pages 140–149, June 2021.
- [16] **Jun Chen\***, “[Extended Kalman Filter Steady Gain Scheduling using  \$k\$ -means Clustering](#),” *International Journal of Modeling, Identification and Control*, volume 34, number 2, pages 158–162, February 2020.
- [15] Xiang Yin, **Jun Chen**, Zhaojian Li and Shaoyuan Li, “[Robust Fault Diagnosis of Stochastic Discrete Event Systems](#),” *IEEE Transactions on Automatic Control*, volume 64, number 10, pages 4237–4244, October 2019.
- [14] **Jun Chen**, Qin Wang, Jianming Lian and Wanning Li, “[Guest Editorial: Advances in Control and Decision for Power and Energy Systems](#),” *Journal of Control and Decision*, volume 5, number 2, pages 115–116, February 2018.
- [13] **Jun Chen**, Christoforos Keroglou, Christoforos N. Hadjicostis and Ratnesh Kumar, “[Revised Test for Stochastic Diagnosability of Discrete-Event Systems](#),” *IEEE Transactions on Automation Science and Engineering*, volume 15, number 1, pages 404–408, January 2018.
- [12] **Jun Chen**, Peter Molnar and Aman Behal, “[Identification of a Stochastic Resonate-and-Fire Neuronal Model via Nonlinear Least Squares and Maximum Likelihood Estimation](#),” *International Journal of Modeling, Identification and Control*, volume 28, number 3, pages 221–231, October 2017.
- [11] **Jun Chen** and Cristian Rabiti, “[Synthetic Wind Speed Scenarios Generation for Probabilistic Analysis of Hybrid Energy Systems](#),” *Energy*, volume 120, pages 507–517, February 2017.

- [10] **Jun Chen**, Mariam Ibrahim and Ratnesh Kumar, “[Quantification of Secrecy in Partially Observed Stochastic Discrete Event Systems](#),” *IEEE Transactions on Automation Science and Engineering*, volume 14, number 1, pages 185–195, January 2017.
- [9] Jong S. Kim, **Jun Chen** and Humberto E. Garcia, “[Modeling, Control, and Dynamic Performance Analysis of a Reverse Osmosis Desalination Plant Integrated within Hybrid Energy Systems](#),” *Energy*, volume 112, pages 52–66, October 2016.
- [8] **Jun Chen** and Humberto E. Garcia, “[Economic Optimization of Operations for Hybrid Energy Systems under Variable Markets](#),” *Applied Energy*, volume 177, pages 11–24, September 2016.
- [7] **Jun Chen**, Humberto E. Garcia, Jong S. Kim and Shannon M. Bragg-Sitton, “[Operations Optimization of Nuclear Hybrid Energy Systems](#),” *Nuclear Technology*, volume 195, number 2, pages 143–156, August 2016.
- [6] Humberto E. Garcia, **Jun Chen**, Jong S. Kim, Richard B. Vilim, William R. Binder, Shannon M. Bragg-Sitton, Richard D. Boardman, Michael G. McKellar and Christiaan J. J. Paredis, “[Dynamic Performance Analysis of Two Regional Nuclear Hybrid Energy Systems](#),” *Energy*, volume 107, pages 234–258, July 2016.
- [5] **Jun Chen** and Ratnesh Kumar, “[Fault Detection of Discrete-Time Stochastic Systems Subject to Temporal Logic Correctness Requirements](#),” *IEEE Transactions on Automation Science and Engineering*, volume 12, number 4, pages 1369–1379, October 2015. (**IEEE Best Paper Award**: [link](#))
- [4] **Jun Chen** and Ratnesh Kumar, “[Stochastic Failure Prognosability of Discrete Event Systems](#),” *IEEE Transactions on Automatic Control*, volume 60, number 6, pages 1570–1581, June 2015.
- [3] **Jun Chen** and Ratnesh Kumar, “[Failure Detection Framework for Stochastic Discrete Event Systems with Guaranteed Error Bounds](#),” *IEEE Transactions on Automatic Control*, volume 60, number 6, pages 1542–1553, June 2015.
- [2] **Jun Chen** and Ratnesh Kumar, “[Polynomial Test for Stochastic Diagnosability of Discrete Event Systems](#),” *IEEE Transactions on Automation Science and Engineering*, volume 10, number 4, pages 969–979, October 2013.
- [1] Lingfei Zhi, **Jun Chen**, Peter Molnar and Aman Behal, “[Weighted Least-Squares Approach for Identification of a Reduced-Order Adaptive Neuronal Model](#),” *IEEE Transactions on Neural Networks and Learning Systems*, volume 23, number 5, pages 834–840, May 2012.

#### Peer Reviewed Conference Articles

- [24] Man Liang and **Jun Chen**, “A Conceptual Design of Barking Drones Fleet Management to Detect and Repulse Cattle,” *21st Asia Pacific Automotive Engineering Conference*, Melbourne, Australia, October 3–5, 2022. ([Preprint](#))
- [23] Ranya Badawi and **Jun Chen\***, “Performance Evaluation of Event-Triggered Model Predictive Control for Boost Converter,” *2022 IEEE Vehicle Power and Propulsion Conference*, Merced, CA, November 1–4, 2022.
- [22] Ranya Badawi and **Jun Chen\***, “[Enhancing Enumeration-Based Model Predictive Control for DC-DC Boost Converter with Event-Triggered Control](#),” *European Control Conference*, London, UK, July 12–15, 2022.
- [21] **Jun Chen\***, Xiangyu Meng and Zhaojian Li, “[Reinforcement Learning-based Event-Triggered Model Predictive Control for Autonomous Vehicle Path Following](#),” *2022 American Control Conference*, Atlanta, GA, June 8–10, 2022.
- [20] Shan Huang and **Jun Chen\***, “[Event-triggered Model Predictive Control for Autonomous Vehicle with Rear Steering](#),” *2022 SAE World Congress*, Detroit, MI, April 5–7, 2022.
- [19] **Jun Chen\***, Aman Behal and Chong Li, “[Active Cell Balancing by Model Predictive Control for Real Time Range Extension](#),” *IEEE Conference on Decision and Control*, Austin, TX, USA, December 13–15, 2021.
- [18] **Jun Chen\*** and Zonggen Yi, “[Comparison of Event-Triggered Model Predictive Control for Autonomous Vehicle Path Tracking](#),” *2021 IEEE Conference on Control Technology and Applications*, San Diego, CA, August 8–11, 2021. (Invited Paper)

- [17] **Jun Chen\*** and Junhui Zhao, “[Synthetic Wind Speed Scenarios Generation using Artificial Neural Networks for Probabilistic Analysis of Hybrid Energy Systems](#),” *2021 IEEE International Symposium on Industrial Electronics*, Kyoto, Japan, June 20–23, 2021.
- [16] **Jun Chen\***, Man Liang and Xu Ma, “[Probabilistic Analysis of Electric Vehicle Energy Consumption Using MPC Speed Control and Nonlinear Battery Model](#),” *2021 IEEE Green Technologies Conference*, Denver, CO, April 7–9, 2021.
- [15] **Jun Chen\***, Zhaojian Li and Xiang Yin, “[Optimization of Energy Storage Size and Operation for Renewable-EV Hybrid Energy Systems](#),” *2021 IEEE Green Technologies Conference*, Denver, CO, April 7–9, 2021.
- [14] Aaron S. Epiney, Andrea Alfonsi, Cristian Rabiti and **Jun Chen**, “[Economic Assessment of Nuclear Hybrid Energy Systems: Optimization using RAVEN](#),” *2017 ANS Annual Meeting*, San Francisco, CA, June 11–15, 2017.
- [13] **Jun Chen**, Jong S. Kim and Cristian Rabiti, “[Probabilistic Analysis of Hybrid Energy Systems Using Synthetic Renewable and Load Data](#),” *2017 American Control Conference*, Seattle, WA, May 24–26, 2017.
- [12] **Jun Chen** and Humberto E. Garcia, “[Operations Optimization of Hybrid Energy Systems under Variable Markets](#),” *2016 American Control Conference*, Boston, MA, July 6–8, 2016.
- [11] Mariam Ibrahim, **Jun Chen** and Ratnesh Kumar, “[A Resiliency Measure for Electrical Power Systems](#),” *2016 IFAC/IEEE International Workshop on Discrete Event Systems*, Xi’an, China, May 30 – June 1, 2016.
- [10] Mariam Ibrahim, **Jun Chen** and Ratnesh Kumar, “[Quantification of Distributed Secrecy Loss in Stochastic Discrete Event Systems under Bounded-Delay Communications](#),” *2016 IFAC/IEEE International Workshop on Discrete Event Systems*, Xi’an, China, May 30 – June 1, 2016.
- [9] Mariam Ibrahim, **Jun Chen** and Ratnesh Kumar, “[An Information Theoretic Measure for Secrecy Loss in Stochastic Discrete Event Systems](#),” *2015 International Conference on Electronics, Computers and Artificial Intelligence – International Workshop on Systems, Safety and Security*, Bucharest, Romania, June 25–27, 2015.
- [8] **Jun Chen** and Ratnesh Kumar, “[Failure Prognosability of Stochastic Discrete Event Systems](#),” *2014 American Control Conference*, Portland, OR, June 4–6, 2014.
- [7] **Jun Chen** and Ratnesh Kumar, “[Pattern Mining for Predicting Critical Events from Sequential Event Data Log](#),” *2014 IFAC/IEEE International Workshop on Discrete Event Systems*, Paris-Cachan, France, May 14–16, 2014.
- [6] Mariam Ibrahim, **Jun Chen** and Ratnesh Kumar, “[Secrecy in Stochastic Discrete Event Systems](#),” *2014 IEEE International Conference on Networking, Sensing and Control*, Miami, FL, April 7–9, 2014.
- [5] **Jun Chen** and Ratnesh Kumar, “[Failure Diagnosis of Discrete-Time Stochastic Systems Subject to Temporal Logic Correctness Requirements](#),” *2014 IEEE International Conference on Networking, Sensing and Control*, Miami, FL, April 7–9, 2014.
- [4] **Jun Chen** and Ratnesh Kumar, “[Online Failure Diagnosis of Stochastic Discrete Event Systems](#),” *2013 IEEE Multi-Conference on Systems and Control – IEEE Conference on Computer Aided Control System Design*, Hyderabad, India, August 28–30, 2013.
- [3] **Jun Chen** and Ratnesh Kumar, “[Decentralized Failure Diagnosis of Stochastic Discrete Event Systems](#),” *2013 IEEE Conference on Automation Science and Engineering*, Madison, WI, August 17–21, 2013. (Invited Paper)
- [2] **Jun Chen** and Ratnesh Kumar, “[Polynomial Test for Stochastic Diagnosability of Discrete Event Systems](#),” *2012 IEEE Conference on Automation Science and Engineering*, Seoul, Korea, August 20–24, 2012.
- [1] **Jun Chen**, Jose Suarez, Peter Molnar and Aman Behal, “[Maximum Likelihood Parameter Estimation in a Stochastic Resonate-and-Fire Neuronal Model](#),” *2011 IEEE International Conference on Computational Advances in Bio and medical Sciences (ICCBAS)*, Orlando, FL, February 3–5, 2011.

## Thesis and Dissertation

- [2] **Jun Chen**, “[Failure Diagnosis and Prognosis in Stochastic Discrete-Event and Cyber-Physical Systems](#),” Ph.D. Dissertation, Department of Electrical and Computer Engineering, Iowa State University, Ames, IA, USA, August 2014.
- [1] **Jun Chen**, “On the Reliability of MVB Communication Network,” Bachelor’s Thesis, College of Electrical Engineering, Zhejiang University, China, June 2009.