JUNTAO CHEN

New York, NY ◇ Phone: (646)868-4173 ◇ Email: jchen504@fordham.edu
Web: http://juntaochen1.github.io ◇ Google Scholar

EXPERIENCE

Fordham University — New York, NY
Department of Computer and Information Sciences — Sep. 2020 – now
Fordham Center for Cybersecurity (affiliated)
Assistant Professor

New York University, Tandon School of Engineering — Brooklyn, NY
Department of Electrical and Computer Engineering — June 2020 - Aug. 2020
Research Associate

New York University, Tandon School of Engineering — Brooklyn, NY
Laboratory for Agile and Resilient Complex Systems — Sep. 2014 - May 2020
NYU Center for Cybersecurity (CCS)
Research Assistant

EDUCATION

New York University, Tandon School of Engineering — Brooklyn, NY
Ph.D. in Electrical Engineering — May 2020
Advisor: Prof. Quanyan Zhu
Alexander Hessel Best Ph.D. Dissertation Award

Central South University, School of Information Science and Engineering — Changsha, China
B.E. in Electrical Engineering and Automation — May 2014

University of Illinois at Urbana-Champaign, Coordinated Science Laboratory — Urbana, IL
Visiting Scholar, Mentor: Prof. Tamer Başar — July – Aug. 2019

RESEARCH INTERESTS

Cyber-Physical Systems, Security and Resilience, Equitable Smart Cities, Internet of Things
Game and Decision Theory, Learning and Optimization, Artificial Intelligence

GRANTS

- National Science Foundation, *ERI: Multi-Layer Dynamic Strategic Decision-Making for Integrated Cyber-Physical Energy Systems Security and Resilience*, $200k, Role: single PI, 2022-2024
- A&S's Deans Faculty Challenge Grant, Fordham Faculty of Arts & Sciences, 2022-2023
- Fordham-NYU Research Fellow and Research Intern Award, Fordham Office of Research, 2022
- Faculty Research Grant, Fordham Office of Research, 2022-2023
- Faculty Research Grant, Fordham Office of Research, 2021-2022

PUBLICATIONS

Books

[**B1**] J. Chen and Q. Zhu, *A Game- and Decision-Theoretic Approach to Resilient Interdependent Network Analysis and Design*, Springer, 2020.

[**B2**] Q. Zhu, J. Baras, R. Poovendran, and J. Chen (Eds.), *Decision and Game Theory for Security*, Springer, 2020.

Book Chapters

[**BC1**] J. Chen and Q. Zhu, "A System-of-Systems Approach to Strategic Cyber Defense and Robust Switching Control Design for Cyber-Physical Wind Energy Systems," book chapter in *Security and Resilience of Control Systems: Theory and Applications*, Springer, 2022.

[**BC2**] L. Huang, J. Chen and Q. Zhu, "Factored Markov Game Theory for Secure Interdependent Infrastructure Networks," book chapter in *Game Theory for Security Risk Management*, Springer, 2018.

Journal Papers

[**J1**] J. Hughes* and J. Chen, "Resilient and Distributed Discrete Optimal Transport with Deceptive Adversary: A Game-Theoretic Approach," *IEEE Control Systems Letters*, vol 6, pp. 1166 - 1171, 2022.

[**J2**] J. Chen and Q. Zhu, "A Cross-Layer Design Approach to Strategic Cyber Defense and Robust Switching Control for Wind Energy Systems," *IEEE Transactions on Automation Science and Engineering*, to appear, 2022.

[**J3**] J. Chen, C. Touati, and Q. Zhu, "A Dynamic Game Approach to Designing Secure Interdependent IoT-Enabled Infrastructure Network," *IEEE Transactions on Network Science and Engineering*, vol 8, no 3, pp. 2601-2612, 2021.

[**J4**] J. Chen, Y. Huang, R. Zhang, and Q. Zhu, "Optimal Curing Strategy for Competing Epidemics Spreading over Complex Networks," *IEEE Transactions on Signal and Information Processing over Networks*, vol 7, pp. 294-308, 2021.

[**J5**] J. Chen, Q. Zhu, and T. Başar, "Dynamic Contract Design for Systemic Cyber Risk Management of Interdependent Enterprise Networks," *Dynamic Games and Applications*, vol 11, pp. 294 - 325, 2021.

[**J6**] G. Peng, J. Chen and Q. Zhu, "Distributed Stabilization of Two Interdependent Markov Jump Linear Systems with Partial Information," *IEEE Control Systems Letters*, vol 5, no 2, pp. 713–718, 2021.

[**J7**] J. Chen, C. Touati, and Q. Zhu, "A Dynamic Game Approach to Strategic Design of Secure and Resilient Infrastructure Network," *IEEE Transactions on Information Forensics and Security*, vol 15, pp. 462 - 474, 2020.

[**J8**] J. Chen, C. Touati, and Q. Zhu, "Optimal Secure Two-Layer IoT Network Design," *IEEE Transactions on Control of Network Systems*, vol 7, no 1, pp. 398 - 409, 2020.

[**J9**] J. Chen and Q. Zhu, "Control of Multi-Layer Mobile Autonomous Systems in Adversarial Environments: A Games-in-Games Approach," *IEEE Transactions on Control of Network Systems*, vol. 7, no 3, 1056 - 1068, 2020.

[**J10**] Y. Huang, J. Chen, L. Huang, and Q. Zhu, "Dynamic Games for Secure and Resilient Control System Design," *National Science Review*, vol 7, no 7, pp. 1125–1141, 2020.

[**J11**] J. Chen and Q. Zhu, "Interdependent Strategic Security Risk Management with Bounded Rationality in the Internet of Things," *IEEE Transactions on Information Forensics and Security*, vol. 14, no. 11, pp. 2958 - 2971, 2019.

[**J12**] J. Pawlick, J. Chen, and Q. Zhu, "iSTRICT: An Interdependent Strategic Trust Mechanism for the Cloud-Enabled Internet of Controlled Things," *IEEE Transactions on Information Forensics and Security*, vol. 14, no. 6, pp. 1654 - 1669, 2019.

[**J13**] J. Chen and Q. Zhu, "A Stackelberg Game Approach for Two-Level Distributed Energy Management in Smart Grids," *IEEE Transactions on Smart Grid*, vol. 9, no. 6, pp. 6554-6565, 2018.

[**J14**] J. Chen and Q. Zhu, "Security as a Service for Cloud-Enabled Internet of Controlled Things Under Advanced Persistent Threats: A Contract Design Approach," *IEEE Transactions on Information Forensics and Security*, vol. 12, no. 11, pp. 2736-2750, 2017.

[**J15**] J. Chen and Q. Zhu, "A Game-Theoretic Framework for Resilient and Distributed Generation Control of Renewable Energies in Microgrids," *IEEE Transactions on Smart Grid*, vol. 8, no. 1, pp. 285-295, 2017.

[**J16**] J. Chen, C. Touati, and Q. Zhu, "A Dynamic Game Analysis and Design of Infrastructure Network Protection and Recovery," *ACM SIGMETRICS Performance Evaluation Review*, vol. 45, no. 2, pp. 125-128, 2017.

Conference Papers

[**C1**] J. Hughes* and J. Chen, "Differentially Private ADMM-Based Distributed Discrete Optimal Transport for Resource Allocation," *IEEE Global Communications Conference (GLOBECOM)*, 2022.

[**C2**] N. Kaur* and J. Chen, "Collaborative Learning for Large-Scale Discrete Optimal Transport under Incomplete Populational Information," *IEEE International Conference on Computer Communications (INFOCOM) – Poster*, 2022.

[**C3**] N. Kaur*, J. Hughes* and J. Chen, "VaxEquity: A Data-Driven Risk Assessment and Optimization Framework for Equitable Vaccine Distribution," *56th Annual Conference on Information Sciences and Systems (CISS)*, 2022.

[**C4**] J. Chen, Y Huang, and Q. Zhu, "Transactive Resilience in Renewable Microgrids: A Contract-Theoretic Approach," *56th Annual Conference on Information Sciences and Systems (CISS)*, 2022.

[**C5**] Y. Wang, U. Pillai, J. Farooq, and J. Chen, "Obstacle Avoidance in Mobile Robot Navigation under Unknown Environments Using Modified Artificial Potential Fields," *IEEE International Conference on Robotics and Automation (ICRA)*, submitted, 2022.

[**C6**] C. King* and J. Chen, "Nash-Regularized Control Policy Learning of Linear-Quadratic Zero-Sum Differential Games from Demonstrations," *American Control Conference (ACC)*, submitted, 2022.

[**C7**] J. Hughes* and J. Chen, "Security Investment over Networks with Bounded Rational Agents: Analysis and Distributed Algorithm," *American Control Conference (ACC)*, submitted, 2022.

[**C8**] Y Huang, J. Chen, and Q. Zhu, "Defending an Asset with Partial Information and Selected Observations: A Differential Game Framework," *IEEE Conference on Decision and Control (CDC)*, 2021.

[**C9**] J. Hughes* and J. Chen, "Fair and Distributed Dynamic Optimal Transport for Resource Allocation over Networks," *55th Annual Conference on Information Sciences and Systems (CISS)*, 2021.

[**C10**] G. Peng, T. Li, S. Liu, J. Chen, and Q. Zhu, "Locally-Aware Constrained Games on Networks," *American Control Conference (ACC)*, 2021.

[**C11**] Y. Pan, G. Peng, J. Chen, and Q. Zhu, "MASAGE: Model-Agnostic Sequential and Adaptive Game Estimation," *11th International Conference on Decision and Game Theory for Security (GameSec)*, 2020.

[**C12**] J. Chen and Q. Zhu, "A Games-in-Games Approach to Mosaic Command and Control Design of Dynamic Network-of-Networks for Secure and Resilient Multi-Domain Operations," *SPIE, Sensors and Systems for Space Applications*, 2019.

[**C13**] J. Chen and Q. Zhu, "A Differential Game Approach to Dynamic Contract Design for Systemic Cyber Risk Management under Asymmetric Information," *Allerton Conference on Communication, Control, and Computing (Allerton)*, 2018.

[**C14**] J. Chen and Q. Zhu, "Security Investment under Cognitive Constraints: A Gestalt Nash Equilibrium Approach," *52th Annual Conference on Information Sciences and Systems (CISS)*, 2018.

[**C15**] L. Huang, J. Chen and Q. Zhu, "Distributed and Optimal Resilient Control of Large-Scale Interdependent Critical Infrastructures," *Winter Simulation Conference (WSC)*, 2018.

[**C16**] J. Chen, C. Touati and Q. Zhu, "Heterogeneous Multi-Layer Adversarial Network Design for the IoT-Enabled Infrastructures," *IEEE Global Communications Conference (GLOBECOM)*, 2017.

[**C17**] L. Huang, J. Chen and Q. Zhu, "A Large-Scale Markov Game Approach to Dynamic Protection of Interdependent Infrastructure Networks," *Conference on Decision and Game Theory for Security (GameSec)*, 2017.

[**C18**] J. Chen and Q. Zhu, "Interdependent Strategic Cyber Defense and Robust Switching Control Design for Wind Energy Systems," *IEEE Power and Energy Society General Meeting (PESGM)*, 2017.

[**C19**] L. Huang, J. Chen and Q. Zhu, "A Factored MDP Approach to Optimal Mechanism Design for Resilient Large-Scale Interdependent Critical Infrastructures," *Workshop on Modeling and Simulation of Cyber-Physical Energy Systems, Cyber-Physical Systems Week (CPS Week)*, 2017.

[**C20**] V. Kurian, J. Chen and Q. Zhu, "Electric Power Dependent Dynamic Tariffs for Water Distribution Systems," *Workshop on Cyber-Physical Systems for Smart Water Networks, Cyber-Physical Systems Week (CPS Week)*, 2017.

[**C21**] J. Chen and Q. Zhu, "Optimal Contract Design under Asymmetric Information for Cloud-Enabled Internet of Controlled Things," *Conference on Decision and Game Theory for Security (GameSec)*, 2016.

[**C22**] J. Chen and Q. Zhu, "Resilient and Decentralized Control of Multi-level Robotic Networks to Maintain Connectivity under Adversarial Attacks," *IEEE Conference on Decision and Control (CDC)*, 2016.

[**C23**] J. Chen and Q. Zhu, "Interdependent Network Formation Games with an Application to Critical Infrastructures," *American Control Conference (ACC)*, 2016.

[**C24**] J. Chen and Q. Zhu, "Optimal Allocation of Robotic Wind Turbine Inspectors in a Wind Farm," *IEEE Power and Energy Society General Meeting (PESGM)*, 2015.

[**C25**] J. Chen, L. Zhou and Q. Zhu, "Resilient Control Design for Wind Turbines Using Markov Jump Linear System Model with Levy Noise," *IEEE International Conference on Smart Grid Communications (SmartGridComm)*, 2015.

Workshop Abstracts

[**W1**] J. Chen and Q. Zhu, "Dynamic Contract Design for Systemic Cyber Risk Management of Interdependent Enterprise Network," *8th Midwest Workshop on Control and Game Theory (Poster presentation)*, St. Louis, MO, 2019.

[**W2**] J. Chen, R. Zhang and Q. Zhu, "Optimal Control of Interdependent Epidemics in Complex Networks," *SIAM Workshop on Network Science (Oral presentation)*, Boston, MA, 2016.

[**W3**] J. Chen and Q. Zhu, "Interdependent Network Formation Games," *SIAM Workshop on Network Science (Poster presentation)*, Snowbird, Utah, 2015.

Dissertation

[**D1**] PhD Dissertation: *Trustworthy Cyber-Physical Networks by Design: Toward a System Scientific Foundation for Security and Resilience in a Connected World*, May 2020.
[NYU Alexander Hessel Best Ph.D. Dissertation Award]

$\star$: supervised students

SELECTED HONORS & AWARDS

Engineering Research Initiation Award, NSF	*2022*
Alexander Hessel Award for the Best Ph.D. Dissertation in Electrical Engineering, NYU	*2021*
Dante Youla Award for Graduate Research Excellence, NYU	*2019*
NSF Travel Award, NeTS Early-Career Investigators Workshop	*2019*

Student Travel Award, MWCGT	*2019*
NSF Student Travel Grant, GameSec	*2016*
IEEE CSS Student Travel Award, CDC	*2016*
SIAM Student Travel Grant, SIAM NS	*2015*
Ernst Weber Fellowship, NYU Tandon School of Engineering	*2014-2016*
Honor Graduates of Central South University and Hunan Province, China	*2014*
BYD Fellowship for Academic Excellence, Central South University	*2012*
First-Class Scholarship, Central South University	*2011-2013*
National Scholarship, China Ministry of Education	*2011, 2013*

TEACHING, MENTORING, AND SERVICES

Teaching at Fordham:

- CISC 2100 & 2110: Discrete Structure II & Lab, *(F20, F21)*
- CISC 5380: Programming with Python, *(S22)*
- CISC 5650: Cybersecurity Essentials *(F20, S21, F21, F22)*
- CISC 5835: Algorithms for Data Science *(S22, F22)*

Mentoring & Advising at Fordham:

Current Students:

- Courtney King, *PhD in Computer Science*
- Bailey Clark, *MS in Data Science*
- Navpreet Kaur, *BS in Math and Econ*
- James Guest, *BS in Computer Science*
- Gabrielle Ebbrecht, *BS in Business & Data Science*
- Roger Vo, *BS in Computer Science*
- Bill Do, *BS in Computer Science*

Graduated Students:

- Jason Hughes, *MS in Data Science*, Thesis: An Algorithmic Foundation for Fair, Secure, and Differentially Private Distributed Discrete Optimal Transport, 2021 (Thesis Chair)
  First Placement: Journeyman Fellow at Army Research Lab

Thesis Committee Students:

- Vaishali Sharma, *MS in Data Science*, 2021 (Thesis Reader)
- Ryan L'Abbate, *MS in Data Science*, 2022 (Thesis Reader)
- Wenrui Mu, *MS in Data Science*, 2022 (Thesis Reader)

Mentored Students' Awards & Fellowships:

- Roger Vo, Len Blavatnik STEM Research Fellowship, 2022
- James Guest, Fordham-NYU Research Intern Award, 2022
- Navpreet Kaur, FCLC Summer Research Assistant Fellowship, 2021

Other Mentoring Service at Fordham:

- Faculty mentor, Tri-State ExploreCSR, Sponsored by Google Research. Project: Fairness and Privacy in the Optimal Transport for Resource Allocation, February 22 – April 23, 2021.
  - Students: Maria Jara, Navpreet Kaur, Hailey Bober, Erin Yan (all female undergraduate students)
  - Awarded Best Poster Award (2nd Place)

Departmental Services:

- Committee Member, CS PhD Program Committee, 2021 - present
- Committee Member, Master of Data Science Admission Committee, 2021 - present
- Committee Member, Master of Cybersecurity Admission Committee, 2021 - present
- Committee Member, CIS Faculty Search Committee, 2022
- Committee Member, CIS Faculty Search Committee, 2021

SELECTED INVITED TALKS

- "Towards Cyber-Secure and Resilient Smart Cities", International Conference on Cyber Security (ICCS), July 18, 2022.
- "Decision and Game Theory for Cyber-Physical Security", Fordham University Research Day, April 25, 2022.
- "Real-Time Security and Resilience for Multi-Layer Mobile Autonomous Systems", Artificial Intelligence for Resilient Control Systems Track, Resilient Week, Oct. 2020.
- "Enhancing Cyber-Physical Systems Security and Resilience: A Game- and Decision-Theoretic Approach", Department of Electrical and Computer Engineering, Bradley University, IL, Aug. 2019.
- "Optimal Mechanism Design for On-Demand Service Provision in Infrastructure Networks", CSL Seminar, University of Illinois at Urbana-Champaign, IL, Jul. 2019.
- "Strategic Design of Secure and Resilient Infrastructure Network: A Dynamic Game Approach", International Conference on Network Games, Control and Optimisation (NETGCOOP), Brooklyn, NY, Nov. 2018.
- "Dynamic Cyber Risk Management with Uncertainty under Asymmetric Information", AMS Sectional Meeting on Optimization under Uncertainty, Boston, MA, Apr. 2018.

PROFESSIONAL SERVICES

Editorial Board

- Editorial Board, Journal of Frontiers in Communications and Networks - IoT and Sensor Networks
- Junior Editorial Board, Journal of Surveillance, Security and Safety

Conference Committee

- Web Chair, Intl. Conf. on NETwork Games, COntrol and OPtimisation (NETGCOOP), 2021
- Session Chair, Game Theory and Iterative Algorithms for Wireless Communication, Intl. Conf. on NETwork Games, COntrol and OPtimisation (NETGCOOP), 2021
- Poster Session Chair, Google Tri-State ExploreCSR Workshop, 2021
- Program Committee Member, Cyber Security Awareness Week (CSAW), 2020
- Publication Chair, Intl. Conf. on Decision and Game Theory for Security (GameSec), 2020
- Session Chair, Cyber Deception, GameSec 2020
- Program Committee Member, Cyber Security Awareness Week (CSAW), 2019
- Registration Chair, Intl. Conf. on NETwork Games, COntrol and OPtimisation (NETGCOOP), 2018

Proposal Reviews

- NSF Panelist, CPS and SaTC, 2022
- NSF Panelist, S&CC, 2021
- ORAU Powe Faculty Awards reviewer, 2022
- ORAU Powe Faculty Awards reviewer, 2021

Journal Reviews

- IEEE Transactions on Information Forensics and Security
- IEEE Transactions on Control of Network Systems
- IEEE Transactions on Dependable and Secure Computing
- IEEE Transactions on Automatic Control
- IEEE Transactions on Signal and Information Processing over Networks
- IEEE Transactions on Control System Technology
- IEEE Transactions on Wireless Communications
- IEEE Transactions on Smart Grid
- IEEE Transactions on Network and Service Management
- IEEE Transactions on Automation Science and Engineering
- IEEE Transactions on Network Science and Engineering
- IEEE Internet of Things Journal
- IEEE Transactions on Power Electronics
- IEEE/CAA Journal of Automatica Sinica
- IEEE Systems Journal
- IEEE Control Systems Letters
- IEEE Communications Surveys and Tutorials
- IEEE Journal on Miniaturization for Air and Space Systems
- IEEE Access
- Automatica, Elsevier
- Computer & Security, Elsevier
- Journal of Cleaner Production, Elsevier
- ACM Computing Surveys
- Wireless Networks, Springer
- Annals of Telecommunications, Springer
- npj Digital Medicine

Conference Reviews

- IEEE Conference on Decision and Control (CDC)
- IEEE Conference on Communications and Network Security (CNS)
- IEEE Conference on Control Technology and Applications (CCTA)
- American Control Conference (ACC)
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- Conference on Decision and Game Theory for Security (GameSec)
- Cyber Security Awareness Week (CSAW)
- IFAC World Congress
- IFIP Conference on Data and Applications Security and Privacy
- Resilience Week
- World Forum on Internet of Things (WF-IoT)
- North American Power Symposium (NAPS)

PROFESSIONAL MEMBERSHIPS

IEEE Member
Member, IEEE Computational Intelligence Society
Member, IEEE Robotics and Automation Society

Member, IEEE Control Systems Society
Member, IEEE Power and Energy Society