

# CURRICULUM VITAE

## Kaiyan Yu

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### EDUCATION

- Ph.D.** *Mechanical and Aerospace Engineering, Rutgers University* October 2017  
**B.S.** *Intelligent Science and Technology, Nankai University (China)* July 2010

### RESEARCH INTERESTS

- Dynamic systems and controls
  - ▷ dynamic systems modeling and control
  - ▷ mechatronic systems and control
  - ▷ nonlinear, robust, and adaptive control system design
- Autonomous robotic systems
  - ▷ autonomous vehicles/robots
  - ▷ motion planning, navigation and control
  - ▷ human/robot interactions
- Automation science and engineering
  - ▷ automation for micro-/nano-systems
  - ▷ nano/micro particles control and manipulation
  - ▷ intelligent autonomous system

### HONORS/ AWARDS

- NSF Doctoral Consortium Award, *2016 IEEE Conference on Automation Science and Engineering*
- Best Student Paper Award Finalist <sup>1</sup>, *2014 IEEE/ASME International Conf. on Advanced Intelligent Mechatronics*
- “Hundred Reserve Young Teachers” program, Nankai University, 2010
- Graduate with Highest Honor, Nankai University, 2010
- Best Undergraduate Thesis, Nankai University, 2010
- National Scholarship/Fellowship, Nankai University, 2008-2009
- Wumart Science Masters Scholarship/Fellowship, Nankai University, 2007-2008
- First Prize of Excellent Undergraduate Scholarship/Fellowship, Nankai University, 2006-2007

### TEACHING EXPERIENCE

- **Instructor**  
*Department of Mechanical Engineering, Binghamton University*
  - ▷ **ME 528:** Modern Robotics, New course, Graduate *Fall 2018, Fall 2019, Fall 2020, Spring 2022*
  - ▷ **ME 424:** Control System in Mechanical Engineering, Undergrad core  
*Spring 2019, Spring 2020, Spring 2021, Fall 2021, Fall 2022*
  - ▷ **ME 428:** Robotics, Undergrad tech elective *Spring 2018, Spring 2020, Spring 2021, Spring 2022*
- Department of Mechanical and Aerospace Engineering, Rutgers University*
  - ▷ **MAE 221:** Engineering Mechanics: Statics, Undergrad core *Summer 2016*

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<sup>1</sup>Due to visa application issue, I did not attend and participate the best paper competition at 2014 AIM in France.

- **Teaching assistant/lab instructor**

*Department of Mechanical and Aerospace Engineering, Rutgers University*

▷ **Byrne Freshmen Seminar: Robotics: The past, the present, the future** *Spring 2016, Spring 2017*

▷ **MAE 361: Introduction to Mechatronics** *Spring 2012, Spring 2013, Spring 2014*

*Institute of Robotics and Automatic Information System, Nankai University* *Spring 2011*

▷ An Introduction to Robotics

- **Seminar lecturer**

*ChuangYuan Information Technology Club, Nankai University* *2008–2009*

▷ C++ Programming Language

▷ Computer Graphic Design

## RESEARCH EXPERIENCE

- **Assistant professor** *January 2018 – present*

*Department of Mechanical Engineering, Binghamton University*

- **Research associate** *December 2017*

*Department of Mechanical and Aerospace Engineering, Rutgers University*

- **Graduate research assistant** *September 2011 – September 2017*

*Department of Mechanical and Aerospace Engineering, Rutgers University*

- **Undergraduate and graduate research assistant** *July 2008 – July 2011*

*Institute of Robotics and Automatic Information System, Nankai University*

- **Cross-disciplinary Scholars in Science and Technology (CSST)** *July 2009–September 2009*

*Computer Science Department, University of California, Los Angeles*

## PUBLICATIONS <sup>2</sup>

- **Book chapters**

B1. **K. Yu** (2022). Electrophoresis-Based Manipulation of Micro- and Nanoparticles in Fluid Suspensions, In *Field-Driven Micro and Nanorobots for Biology and Medicine*, Y. Sun, X. Wang, and J. Yu (Ed.), Springer Nature, Switzerland, pp 133-164.

- **Refereed Journal papers that have appeared or been accepted**

J16. J. Wu and **K. Yu**<sup>†</sup> (2022). Adaptive tube model predictive control for manipulating micro- and nanoparticles in fluid suspensions under global external fields. *IEEE Trans. on Automation Science and Engineering*, to appear.

J15. X. Li, J. Wu, J. Song and **K. Yu**<sup>†</sup> (2022). Informed sampling-based motion planning for manipulating multiple micro agents using global external electric fields. *IEEE Trans. on Automation Science and Engineering*, vol. 19, no. 3, pp. 1422-1433.

J14. Y. Zhang, J. Xu, P. Zhang, W. Li, **K. Yu** and P. Huang<sup>†</sup> (2022). Monocular visual-inertial sensing of unknown rotating objects: observability analyses and case study for metric 3D reconstructing of space debris. *IEEE Robotics and Automation Letters*, vol. 7, no. 2, pp. 2423-2430.

J13. J. Wu, X. Li, and **K. Yu**<sup>†</sup> (2020). Electrophoresis-based adaptive manipulation of nanowires in fluid suspension. *IEEE Trans. on Mechatronics*, vol. 25, no. 2, pp 638-649.

J12. H. Xiang, M. Trkov, **K. Yu** and J. Yi<sup>†</sup> (2019). A stick-slip interactions model of soft-solid frictional contacts. *ASME Journal of Dynamic Systems, Measurement and Control*, vol. 141, no. 4, pp 041015-041015-10.

J11. **K. Yu**<sup>†</sup>, J. Yi, and J. Shan (2018). Real-time motion planning of multiple nanowires in fluid suspension under electric-field actuation. *International Journal of Intelligent Robotics and Applications*, vol. 2, no. 4, pp 383-399.

J10. **K. Yu**, J. Yi<sup>†</sup>, and J. Shan (2018). Automated characterization and assembly of individual nanowires for device fabrication. *Lab on a Chip*, vol. 18, no. 10, pp 1494-1503.

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<sup>2</sup>Underlined authors are graduate students or undergraduate students under my supervision. The name with a “†” symbol indicates the corresponding author.

- J9. **K. Yu**, J. Yi<sup>†</sup>, and J. Shan (2018). Simultaneous multiple-nanowire motion control, planning and manipulation under electric-fields in fluid suspension. *IEEE Trans. on Automation Science and Engineering*, vol. 15, no. 1, pp 80-91.
- J8. X. Lu, **K. Yu**, Y. Zhang, J. Yi<sup>†</sup>, J. Liu, and Q. Zhao (2017). Whole-body pose estimation in physical rider-bicycle interactions with a monocular camera and wearable gyroscopes. *ASME Journal of Dynamic Systems, Measurement and Control*, vol. 139, no. 7, pp 071005-071005-11.
- J7. **K. Yu**, J. Yi<sup>†</sup>, and J. Shan (2015). Motion planning and control of nanowires under electric fields in fluid suspension. *IEEE Trans. on Automation Science and Engineering*, vol. 12, no. 1, pp 37-49.
- J6. X. Lu, J. Liu<sup>†</sup>, **K. Yu**, Y. Li, and L. Sun (2014). Pose measurements using quaternion and Kalman filter. *High Technology Letters*, vol. 20, no. 2, pp 131-139.
- J5. X. Lu, J. Liu<sup>†</sup>, **K. Yu**, Y. Li, and L. Sun (2013). Uncalibrated visual servoing design for the competitive networked robots. *High Technology Letters*, vol. 19, no. 4, pp 413-421.
- J4. **K. Yu**<sup>†</sup>, J. Liu, X. Lu, H. Li, Y. Li, and L. Sun (2011). Design and implementation of simulation system for the competitive robot system. *Robot*, vol. 33, no. 6, pp 649-657 (in Chinese).
- J3. X. Lu<sup>†</sup>, J. Liu, **K. Yu**, H. Li, Y. Li, and L. Sun (2011). Rapid detection of moving target in the competitive networked robots. *Robot*, vol. 33, no. 6, pp 658-665,672 (in Chinese).
- J2. J. Yu<sup>†</sup>, **K. Yu**, X. Shi, and R. Peng (2009). Simultaneous determination of lead and zinc in copper concentrate by BP-artificial neural network spectrophotometry. *Metallurgical Analysis*, vol. 29, no. 3, pp 52-55.
- J1. W. Chou<sup>†</sup>, X. Lu, **K. Yu**, X. Liu, and S. Chen (2009). Indoor autonomous service robot system. *Automation & Instrumentation*, vol. 24, no. 9, pp 46-49 (in Chinese).

● **Refereed conference papers that have appeared or been accepted**

- C22. J. Song, J. Wu, and **K. Yu** (2022). 3D pose identification of moving micro- and nanowires in fluid suspensions under bright-field microscopy. In *Proceedings of 2022 IEEE International Conference on Automation Science and Engineering*, Mexico City, Mexico, pp 987-992. (**Best Student Paper Award.**)
- C21. J. Wu and **K. Yu** (2021). Adaptive tube model predictive control of micro- and nanoparticles in fluid suspensions using global external fields. In *Proceedings of 2021 IEEE/ASME International Conference on Advanced Intelligent Mechatronics*, Delft, Netherlands, pp 526-531.
- C20. J. Song and **K. Yu** (2021). 3D pose identification of micro- and nanowires in fluid suspensions. In *Proceedings of 2021 IEEE International Conference on Automation Science and Engineering*, Lyon, France, pp 2092-2097.
- C19. A. Joseph, J. Wu, **K. Yu**, L. Jiang, N. Cady, and B. Si (2021). Function-on-function regression for trajectory prediction of small-scale particles towards next-generation neuromorphic computing. In *Proceedings of 2021 IEEE International Conference on Automation Science and Engineering*, Lyon, France, pp 1997-2002.
- C18. X. Li and **K. Yu** (2020). Informed sampling-based motion planning for manipulating multiple micro agents using global external fields. In *Proceedings of 2020 IEEE International Conference on Automation Science and Engineering*, Hong Kong, China, pp 889-894.
- C17. J. Wu and **K. Yu** (2020). Electrophoresis-based adaptive tube model predictive control of micro- and nanoparticles motion in fluid suspension. In *Proceedings of 2020 IEEE/ASME International Conference on Advanced Intelligent Mechatronics*, Boston, MA, pp 2068-2073.
- C16. J. Wu and **K. Yu** (2020). Adaptive tube model predictive control for manipulating multiple nanowires with coupled actuation in fluid suspension. In *Proceedings of 2020 IFAC World Congress*, Berlin, Germany, pp 8734-8739.
- C15. J. Wu and **K. Yu** (2019). Adaptive control of nanowires motion using electric fields in fluid suspension. In *Proceedings of 2019 ASME Dynamic Systems and Control Conference*, Park City, UT, Paper # DSCC2019-9051.
- C14. **K. Yu**, C. Guo, and J. Yi (2019). Complete and near-optimal path planning for simultaneous sensor-based inspection and footprint coverage in robotic crack filling. In *Proceedings of 2019 IEEE International Conference on Robotics and Automation*, Montreal, Canada, pp 8812-8818.
- C13. **K. Yu**, J. Yi, and J. Shan (2018). Automated electric-field-based nanowire characterization, manipulation, and assembly. In *Proceedings of 2018 IEEE International Conference on Automation Science and Engineering*, Munich, Germany, pp 1612-1617.
- C12. C. Guo, **K. Yu**, and J. Yi (2017). Optimal motion planning and control of a crack filling robot for civil infrastructure automation. In *Proceedings of 2017 IEEE International Conference on Automation Science and Engineering*, Xi'an, China, pp 1463-1468.
- C11. **K. Yu**, J. Yi and J. Shan (2016). Time optimal simultaneously motion planning and manipulation of multi-

- ple nanowires under electric-fields in fluid suspension. In *Proceedings of 2016 IEEE International Conference on Automation Science and Engineering*, Dallas, TX, pp 954-959.
- C10. A. Arab, **K. Yu**, J. Yi, and D. Song (2016). Motion planning for aggressive autonomous vehicle maneuvers. In *Proceedings of 2016 IEEE International Conference on Automation Science and Engineering*, Dallas, TX, pp 221-226.
- C9. A. Arab, **K. Yu**, J. Yi, and Y. Liu (2016). Motion control of autonomous aggressive vehicle maneuvers. In *Proceedings of 2016 IEEE International Conference on Advanced Intelligent Mechatronics*, Banff, Canada, pp 1663-1668.
- C8. **K. Yu**, J. Yi, and J. Shan (2015). Motion planning and manipulation of multiple nanowires simultaneously under electric-fields in fluid suspension. In *Proceedings of 2015 IEEE International Conference on Automation Science and Engineering*, Gothenburg, Sweden, pp 489-494.
- C7. **K. Yu**, J. Yi and J. Shan (2014). Motion control and manipulation of nanowires under electric-fields in fluid suspension. In *Proceedings of IEEE/ASME International Conference on Advanced Intelligent Mechatronics*, Besançon, France, pp 366-371. (**Best Student Paper Award finalist**.)
- C6. X. Lu, **K. Yu**, Y. Zhang, J. Yi, and J. Liu (2014). Whole-body pose estimation in physical rider-bicycle interactions with a monocular camera and a set of wearable gyroscopes. In *Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems*, Chicago, IL, pp 4124-4129.
- C5. **K. Yu**, X. Lu, J. Yi, and J. Shan (2013). Electrophoresis-based motion planning and control of nanowires in suspended fluids. In *Proceedings of 2013 IEEE International Conference on Automation Science and Engineering*, Madison, WI, pp 831-836.
- C4. X. Lu, Y. Zhang, **K. Yu**, J. Yi, and J. Liu (2013). Body-segment orientation estimation in rider-bicycle interactions with an un-calibrated monocular camera and wearable gyroscopes. In *Proceedings of 2013 ASME Dynamic Systems and Control Conference*, Palo Alto, CA, DSCC2013-3839.
- C3. Y. Li, X. Lu, **K. Yu**, and J. Liu (2011). Pursuit-evasion strategies of competitive networked robots based on differential games. In *Proceedings of the 30<sup>th</sup> Chinese Control Conference*, Yantai, China, pp 3947-3952 (in Chinese).
- C2. X. Lu, J. Liu, **K. Yu**, H. Li, Y. Li, and L. Sun (2011). High precision and rapid pose measurement for the competitive networked robots. *Chinese Automation Congress*, Beijing, China.
- C1. H. Li, J. Liu, Y. Li, X. Lu, **K. Yu**, and L. Sun (2010). Trajectory planning for visual servoing with some constrains. In *Proceedings of the 29<sup>th</sup> Chinese Control Conference*, Beijing, China, pp 3636-3642.
- **Conference workshop contribution (poster/extend abstract reviewed)**

NC4. **K. Yu** (2018). Motion control, planning and manipulation of multiple nanowires under electric-fields in fluid suspension for automated characterization and nanoassembly. In *Poster Session at 30th annual Electronics Packaging Symposium*, Binghamton, NY.

NC3. **K. Yu**, J. Yi, and J. Shan (2018). Motion control, planning and manipulation of multiple nanowires under electric-fields in fluid suspension for automated characterization and nanoassembly. In *Workshop on 30 Years of Small-Scale Robotics: from Nano-, to Millimeter-Sized Robotic Systems and Applications at 2018 IEEE International Conference on Robotics and Automation*, Brisbane, Australia.

NC2. L. Wang, K. Yang, A. Dusane, M. Cotton, J. Xie, Y. Wang, X. Gong, S. Zhang, C. Yang, E. Kim, **K. Yu**, J. Yi, and A. D. Mazzeo (2017). A jellyfish-based aquatic locomotor with tunable gaits. In *Workshop on Material Robotics at 2017 Robotics Science and Systems*, Boston, MA.

NC1. **K. Yu** (2017). Motion control, planning and manipulation of nanowires under electric-fields in fluid suspension. In *Women in Robotics Workshop at 2017 Robotics Science and Systems*, Boston, MA.
  - **Theses**

T2. **K. Yu** (2017). Motion control, planning and manipulation of nanowires under electric-fields in fluid suspension. Ph.D. dissertation, Department of Mechanical and Aerospace Engineering, Rutgers University.

T1. **K. Yu** (2010). Design and implementation of multi-robot vision simulation system. B.S. thesis, Department of Information Technical Science, Nankai University, China. (**Best Undergraduate Thesis Award**.)

## RESEARCH GRANTS

- **Funded projects**

G5. "CAREER: Simultaneous and Independent Control of Multiple Agents under a Common Electric Field", *National Science Foundation*, CMMI-2146056, 3/1/2022-2/28/2027, PI: **K. Yu**. Amount: \$588,608.00.

- G4. "A Distributed Computing Platform to Enable Multi-task Transfer Learning in Neuromorphic Computing using Ray with TensorFlow", *SUNY-IBM AI Research Alliance, SUNY-IBM*, 10/15/2021-10/14/2022, PI: B. Si, co-PI: **K. Yu**, IBM Technical Leader: Carlos Costa. Amount: \$100,000.00. Prorated amount: \$21,037.00.
- G3. "Hybrid Memristive Neural Network for Neuromorphic Computing with Automated Manipulation of Nanowires", *SUNY Research Seed Grant Program, SUNY*, 10/15/2020-4/14/2022, PI: **K. Yu**, co-PI: B. Si, N. Cady. Amount: \$22,500.00.
- G2. "Automated integration with micro/nanowire-based fine-pitch interconnects for 3D packaging", *Integrated Electronics Engineering Center, Binghamton University*, 8/1/2020-6/30/2021, PI: **K. Yu**. Amount: \$40,000.00.
- G1. "Universal Instruments/United Technologies Aerospace (UIC/UTAS) vibration project", *Integrated Electronics Engineering Center, Binghamton University*, 8/18/2020-9/3/2020, PI: **K. Yu**. Amount: \$9,839.00.

## PROFESSIONAL ACTIVITIES

- Member of the Institute of Electrical and Electronic Engineers (IEEE), 2013–present
- Member of the American Society of Mechanical Engineers (ASME), 2013–present
- Associate Vice President of the *IEEE Robotics and Automation Society (RAS) Media Services Board* (2019-present).
- Associate Editor
  - *IEEE Trans. on Automation Science and Engineering* (2022–present)
  - *IEEE Robotics and Automation Letters* (2021–present)
  - *IFAC Mechatronics* (2021–present)
  - *Frontiers in Robotics and AI* (2022–present)
  - *IEEE International Conference on Robotics and Automation (ICRA), Conference Editorial Board* (2020, 2021)
  - *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Conference Editorial Board* (2019)
  - *IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM), Conference Editorial Board* (2018, 2019, 2020)
  - *American Control Conference (ACC), Conference Editorial Board* (2023)
  - *Modeling, Estimation and Control Conference (MECC), Conference Editorial Board* (2022)
- Organizing/Operating Committee Member
  - Competition co-Chair of the *2024 IEEE International Conference on Robotics and Automation (ICRA)*, Yokohama, Japan.
  - Exhibit and Special Session Chair of the *2023 IEEE/ASME International Conference on Advanced Intelligent Mechatronics*, Seattle, IL.
  - Advisory committee member of the *2022 International Conference on Sustainability and Emerging Trends in Civil and Mechanical Engineering*, Virtual.
  - Stop COVID-Spread Countermeasure (SC2) Committee of the *2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Kyoto, Japan.
- Program Committee Member
  - *American Control Conference* (2023), San Diego, CA.
- Workshop Organizer
  - Organizer and talk presenter of the workshop on "Progress Toward Automated Micro-Bio-Nano Factories Through Robotic Manipulation" at the *2019 IEEE International Conference on Robotics and Automation (ICRA)*, Montreal, Canada.
- Chair/co-Chair/Organizer of sessions in conferences
  - "Automation at Micro-Nano Scales 1" (co-Chair) in *2022 IEEE International Conference on Automation Science and Engineering*
  - "Computer Vision in Automation 2" (Chair) in *2022 IEEE International Conference on Automation Science and Engineering*
- Reviewer for

**Journals:** *IEEE Trans. on Robotics* (2016-2017), *IEEE Trans. on Control Systems Technology* (2016-2017), *IEEE/ASME Trans. on Mechatronics* (2015-2020, 2022), *IEEE Robotics and Automation Letters* (2017, 2018-2020, 2022), *IFAC Mechatronics* (2022), *Control Engineering Practice* (2014-2016, 2018-2020), *ASME Journal of Dynamic Systems, Measurement and Control* (2014-2018), *IEEE Trans. on Automation Science and Engineering* (2013-2014, 2017-2022), *International Journal of Intelligent Robotics and Applications* (2016, 2019), *Micromachines* (2017, 2019-2021), *Robotica* (2018), *IEEE Access* (2018), *Automation in Construction* (2019-2022), *Robotics* (2019), *Robotics and Autonomous Systems* (2019), *Measurement and Control* (2019), *Precision Engineering* (2019), *Mechatronics* (2020, 2022), *Applied Sciences* (2020).

**Conferences:** *American Control Conference (ACC)* (2014, 2017-2019), *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* (2013, 2015, 2017-2018, 2020), *IEEE International Conference on Robotics and Automation (ICRA)* (2013, 2017-2019), *IFAC World Congress* (2020), *IEEE International Conference on Advanced Intelligent Mechatronics (AIM)*(2014-2015, 2019), *IEEE International Conference on Intelligent Transportation Systems (ITSC)* (2014, 2016), *IEEE International Conference on Automation Science and Engineering (CASE)* (2014, 2016-2020), *Modeling, Estimation and Control Conference (MECC)* (2022), *ASME Dynamic Systems and Control Conference (DSCC)* (2013, 2016-2017), *IEEE Vehicular Technology Conference (VTC)* (2016), *International Symposium on Applied Abstraction and Integrated Design (AAID)* (2017).

**Proposals:** *US National Science Foundation (NSF): National Robotics Initiative (NRI)* (2021).

- Panelist for

**Proposals:** *US National Science Foundation (NSF): CMMI* (2020), *ENG* (2019).

## INVITED SEMINARS/TALKS

- *Newest Advances in Systems and Control from Recent DCSD CAREER Awardees* at Modeling, Estimation and Control Conference (MECC), Jersey City, NY, October 2022
- *BU-VIT joint webinar series on autonomous systems*, Binghamton, NY, November 2021
- *IEEC packaging research consortium*, Binghamton, NY, October 2021
- *University at Buffalo*, Department of Mechanical and Aerospace Engineering, Buffalo, NY, December 2020
- *Rensselaer Polytechnic Institute (RPI)*, Department of Electrical Engineering, and Computer, and Systems Engineering, Troy, NY, May 2019
- *University of Waterloo*, Department of Mechanical and Mechatronics Engineering, Waterloo, ON, Canada, March 2017
- *Louisiana State University*, Department of Mechanical and Industrial Engineering, Baton Rouge, LA, March 2017
- *City College of New York*, Department of Mechanical Engineering, New York, NY, March 2017
- *Binghamton University*, Department of Mechanical Engineering, Vestal, NY, March 2017
- *McGill University*, Department of Mechanical Engineering, Montreal, QC, Canada, February 2017
- *California State University at Northridge*, Department of Mechanical Engineering, Northridge, CA, February 2017
- *Fort Lewis College*, Department of Physics and Engineering, Durango, CO, February 2017
- *Rowan University*, Department of Mechanical Engineering, Glassboro, NJ, January 2017
- *New Jersey Institute of Technology*, Department of Mechanical and Industrial Engineering, Newark, NJ, December 2016
- *Louisiana Tech University*, Department of Mechanical Engineering, Ruston, LA, December 2016
- *Boise State University*, Department of Mechanical and Biomedical Engineering, Boise, ID, November 2016

## STUDENT SUPERVISION AND MENTORING <sup>3</sup>

- **Current graduate students**

Juan Wu (Ph.D. student, *Mechanical Engineering, Binghamton University*, 2016 Fall-)

Xilin Li (Ph.D. student, *Mechanical Engineering, Binghamton University*, 2017 Fall-)

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<sup>3</sup>Underlined students are female students under my supervision.

Vishnu Veeraraghavan (Ph.D. student, *Mechanical Engineering, Binghamton University*, 2018 Fall-)

Jiaxu Song (Ph.D. student, *Mechanical Engineering, Binghamton University*, 2019 Fall-)

Shiming Fang (Ph.D. student, *Mechanical Engineering, Binghamton University*, 2019 Fall-)

- **Graduate students alumni/alumna**

Kyle Olstein (4+1 master student, *Mechanical Engineering, Binghamton University*, 2020 Summer-2021 Spring)  
Arron Danehy (4+1 master student, *Mechanical Engineering, Binghamton University*, 2020 Summer)

- **Senior design faculty advisor**

*Binghamton University*

- “Design and Prototype of Robotic Manipulator” (G. Nowell, M. Madsen, B. Thompson, A. Ricci, C. R. Anderson), 2022/2023
- “Robotic Arm Manipulator” (B. Iven, J. Jandik, K. Roach, E. Erb), 2021/2022
- “RACECAR Upgrade for Autonomous Driving with Aggressive Maneuvers” (W. Linderman, C. Dai, T. Gao), 2020/2021
- “Electrospinning Drum Collector” (M. Lindley, H. Yu), 2020/2021, co-advise with Prof. P. Zhang.
- “RACECAR Upgrade for Autonomous Driving with Aggressive Maneuvers” (J. Xing, M. Islam, Y. Tian), 2019/2020
- “Reconnaissance Robot” (C. Gale, A. Paul, D. Adamczuk, J. McCoy, J. Squitieri), 2018/2019, co-advise with Prof. R. McGrann. (**First Place winner of the 2019 MacDonald Family Prize in Senior Design**)
- “Crack-Filling Robot” (M. Jackson, D. Rozhkov, L. S. Bishop, J. Brown, M. Wally, A. K. Reddy), 2018/2019
- “RACECAR System Upgrade” (J. C. Escobar, J. Long, R. Grunder, W. Luo), 2018/2019
- “CubeSat Deorbiting Mechanism” (J. Chinkel, E. Comas, S. D’Attore, C. Long, N. Swerbilov, A. Virga), 2018/2019

- **Undergraduate research assistant/intern mentoring**

*Undergraduate student engaging:* C. Anderson (2020-2021, Mechanical Engineering/Electrical and Computer Engineering), L. Yang (2019, Electrical and Computer Engineering)

*Summer Training Experience in Engineering Research (STEER):* B. Sevalia (Summer 2019)

- **Independent study and ME project mentoring**

- “Simultaneous Localization and Mapping of Autonomous Vehicle”, D. Demetros (Spring 2021)
- “Autonomous Surface Crack Detection and Filling Robot”, M. Castellanos (Spring 2021)
- “3D Manipulation of Micro/Nano Particles in Fluid Suspension”, J. Song (Spring 2021)
- “Task and Motion Planning for Agile Autonomous Vehicles”, S. Fang (Spring 2021)
- “Close-Loop Control of a 3D Printer”, A. R. Waghole (Fall 2019)

- **Dissertation committee**

*Ph.D. students:* M. Daeichin, *Mechanical Engineering*

J. Walsh, *Mechanical Engineering*

M. Pally, *Mechanical Engineering*

V. Kudalka, *Computer Science*

C. Cai, *Mechanical Engineering*

S. M. Mousavi, *Mechanical Engineering*

J. H. Ha, *Mechanical Engineering*

Y. Lai, *Mechanical Engineering*

J. Pourghader, *Mechanical Engineering*

*M.S. students:* D. Nelson, *Mechanical Engineering*

P. Yin, *Mechanical Engineering*

J. H. Ha, *Mechanical Engineering*

F. Xue, *Biomedical Engineering*

Y. Lai, *Mechanical Engineering*

Y. Tian, *Mechanical Engineering*

Advisor: S. Towfighian

Advisor: R. Miles

Advisor: S. Towfighian

Advisor: S. Zhang

Advisor: S. B. Park

Advisor: S. Towfighian

Advisor: S. B. Park

Advisor: S. B. Park

Advisor: R. Miles

Advisor: S. Towfighian

Advisor: S. B. Park

Advisor: S. B. Park

Advisor: Y. Wan

Advisor: S. B. Park

Advisor: S. Towfighian

## UNIVERSITY/DEPARTMENTAL SERVICES

- *Thomas J. Watson School of Engineering and Applied Science, Binghamton University*
  - Instructional Software & Labs Committee (2018-2020)
  - Faculty Advisor for the Strategic Partnership for Industrial Resurgence (SPIR) Project (Spring 2019)
  - Faculty Advisor for the Summer Training Experience in Engineering Research (STEER) (Summer 2019)
- *Department of Mechanical Engineering, Binghamton University*
  - Faculty Search Committee (2021-2022)
  - Graduate Studies Committee (2020-2021, 2022-2023)
  - Undergraduate Studies Committee (2018-2020)
  - Seminar Committee (2018-2019)
  - Junior/Sophomore Advising (2018-present)

## OUTREACH

- Panelist for Women in STEM, National Engineers Week (February 18, 2019)
- Lecturer for Introduction to Autonomous Intelligent Robots, Lyceum Program (Winter, 2021)
- Judge for BattleBots Competition, Watson Combat Robotics League (Spring 2022 and Fall 2022)
- Panelist for “Careers in Academia”, Modeling, Estimation and Control Conference, (October 5, 2022)