# Curriculum Vitæ


## Yan-Bin Jia

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Lab: robolab-iastate.github.io


## Education

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|---|---|
| 1997 | Ph.D. in Robotics, Carnegie Mellon University. |
| 1993 | M.S. in Robotics, Carnegie Mellon University. |
| 1988 | B.S. in Computer Science, University of Science and Technology of China. |

## Employment

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| 2015- | Professor, Department of Computer Science, Iowa State University. |
| 2005-2015 | Associate Professor, Department of Computer Science, Iowa State University. |
| 2007 (Jan-Aug) | Visiting Associate Professor, The Robotics Institute, Carnegie Mellon University. |
| 2006 (Sep-Dec) | Visiting Associate Professor, Department of Computer Science, Stanford University. |
| 1999-2005 | Assistant Professor, Department of Computer Science, Iowa State University. |
| 1998-1999 | Visiting Assistant Professor, Department of Computer Science and Engineering, University of Minnesota. |
| 1998 | Instructor, The Robotics Institute, Carnegie Mellon University. |

## Research Areas

Robotics, dynamic finger gaiting, dexterous cutting of soft objects, motion estimation, impulsive manipulation, impact mechanics, deformable and rigid body grasping, tactile shape recognition and reconstruction, computation for curves and surfaces, localization and robot sensing, optimization, nonlinear control and observation, and kinematics and dynamics of manipulation.

## Research

See activities in the Robotics Lab (robolab-iastate.github.io).

## Honors and Awards

| | |
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| 2014 | Finalist, Best Reviewer Award, Robotics: Science and Systems Conference. |
| 2010 | Finalist, IEEE Transactions on Robotics King-Sun Fu Memorial Best Paper Award. |
| 2002 | CAREER Award, National Science Foundation. |
| 1998 | Finalist, Anton Philips Best Student Paper Award, IEEE International Conference on Robotics and Automation. |
| 1996 | Semi-Finalist, Best Paper Award, IEEE International Conference on Robotics and Automation. |
| 1990-1997 | Graduate Fellowship, Carnegie Mellon University. |
| 1985-1988 | People's Scholarship (one 2nd prize and three 3rd prizes), University of Science and Technology of China. |
| 1984 | Admission to the Special Class for Gifted Young, USTC. |

## Professional Societies

American Association for the Advancement of Science, 1998-2019.
Association for Computing Machinery, 1991-1994.
Institute of Electrical and Electronics Engineers (Robotics and Automation), 1992-2013 (member), 2013- (senior member).
New York Academy of Sciences, 1995-2000.

## Grants (sole PI, $1.63M)

| | |
|---|---|
| 2016-2019 | National Science Foundation (IIS-1651792): “EAGER: Dexterous Robotic Cutting,” $299,858. |
| 2014-2018 | National Science Foundation (IIS-1421034): "RI: Small: From Impact to Impulsive Manipulation, " $524,009. |
| 2009-2013 | National Science Foundation (IIS-0915876): "RI: Small: Robot Grasping of Deformable Objects," $369,795. |
| 2007-2009 | National Science Foundation (IIS-0742334): "SGER: Modeling of Deformation under Grasping," $74,999. |
| 2002-2008 | National Science Foundation (IIS-0133681), "CAREER: Shape Localization, Recognition, and Reconstruction through Touch Sensing," $355,621. |
| 2000-2001 | ISU College of Liberal Arts and Sciences, *Faculty Development Grant*, "Grasping Objects with Tactile Fingers through Rolling," $7,500. |

## Panels and Grant Reviewing

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| 2020 | Panelist National Science Foundation |
| 2017 | Panelist, National Science Foundation. |
| 2016 | Panelist, National Science Foundation. |
| 2014 | Panelist, National Science Foundation. |
| 2013 | Panelist, National Science Foundation. |
| 2012 | Panelist (ad hoc), National Science Foundation. |
| 2010 | Panelist, National Science Foundation. |
| 2009 | Reviewer, National Science Foundation. |
| 2008 | Panelist, National Science Foundation. |
| 2002 | Panelist, National Science Foundation Information Technology Research (ITR). |
| 2002 | Reviewer, Hong Kong Research Grants Council. |
| 2000 | Panelist, National Science Foundation ITR. |

## Editing

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|---|---|
| 2017-2021 | Associate Editor, IEEE Transactions on Robotics |
| 2014, 2006-2008 | Associate Editor, Conference Editorial Board of the IEEE Robotics & Automation Society. |
| 2008-2011 | Associate Editor, IEEE Transactions on Automation Science and Engineering. |
| 2000 | Co-editor, International Journal of Robotics Research, Vol. 19, No. 7. Special Issue on "Tactile Presence". |

## Program Committees

| | |
|---|---|
| 2014 | IEEE/RSJ International Conference on Intelligent Robots and Systems<br>Robotics: Science and Systems |
| 2008 | IEEE International Conference on Robotics and Automation<br>Robotics: Science and Systems |
| 2007 | IEEE International Conference on Robotics and Automation<br>Robotics: Science and Systems<br>International Conference on Advanced Robotics |
| 2006 | IEEE/RSJ International Conference on Intelligent Robots & Systems |
| | IEEE International Conference on Robotics & Automation |
| 2005 | IEEE/RSJ International Conference on Intelligent Robots & Systems |
| 2004 | IEEE/RSJ International Conference on Intelligent Robots & Systems |
| | Sixth International Workshop on Algorithmic Foundations of Robotics |
| 2003 | IEEE/RSJ International Conference on Intelligent Robots & Systems |
| 1999 | ACM Symposium on Computational Geometry |

## Technical Committee

2014- Founding member, Technical Committee on Robotic Hands, Grasping, and Manipulation, IEEE Robotics and Automation Society

## Journal Reviewing

ASME Journal of Mechanisms and Robotics (2016, 2017)
Automatica (2003, 2004)
Computational Geometry: Theory and Applications (2000 or before)
Computer-Aided Design (1991, 2010)
Computational Methods and Programs in Biomedicine (2013)
IEEE Robotics and Automation Letters (2015)
IEEE Transactions on Automation Science and Engineering (2003, 2005-2012; 10+ times)
**IEEE Transactions on Robotics** (2006, 2008, 2009, 2014, 2015, 2016; 10 times)
**IEEE Transactions on Robotics and Automation** (1994-2003, 12+ times)
International Journal of Applied Mathematics and Computer Science
International Journal of Computational Geometry and Applications (before 2000)
International Journal on Mechatronics (2002, 2010)
International Journal of Robotics and Automation (2000, 2001, 2002, 2010)
**International Journal of Robotics Research** (2000, 2001, 2002, 2005, 2013, 2014, 2016-2021; 15 times)
Mathematical Programming
Nonlinear Dynamics
Journal of Robots and Autonomous Systems (2005)
Mathematical Programming (1996)
Proceedings of the Royal Society of London A: Mathematical, Physical & Engineering Sciences (2012)
Robotics and Autonomous Systems (2010)
Robotics and Computer Integrated Manufacturing (2017)
Science Robotics (2020, 2021)
SIGMA (2012)

## Conference Reviewing

ACM Symposium on Computational Geometry (1999)
**IEEE International Conference on Robotics and Automation** (1993, 1998, 2006, 2007, 2009-present)
IEEE International Conference on Robotics and Biomimetics (2008)
IEEE/ASME International Conference on Advanced Intelligent Mechatronics (2009)
**IEEE/RSJ International Conference on Intelligent Robots and Systems** (1995, 2003-2006, 2010-present)
International Conference on Advanced Robotics (2007)
International Joint Conference on Artificial Intelligence (1999)
International Workshop on Algorithmic Foundations of Robotics (2004)
Robotics: Science and Systems (2007, 2008, 2014)

## Journal Articles

1. Xiaoqian Mu, Yuechuan Xue, and Yan-Bin Jia. Mechanics and knife control for robotic cutting. Submitted to *International Journal of Robotics Research*, 2021.

2. Matthew Gardner and Yan-Bin Jia. Motion estimation of free-Flying objects: aerodynamics, constrained filtering, and graph-based feature tracking. Accepted to *IEEE Transactions on Robotics*, 2022.

3. Jiaming Xiong, Yan-Bin Jia, Caishan Liu. Symmetry and relative equilibria of a bicycle system. *Russian Journal of Nonlinear Dynamics*, vol. 17, no. 4, pp. 391-411, 2021.

4. Yan-Bin Jia, Matthew Gardner, and Xiaoqian Mu. Batting an in-flight object to the target. *International Journal of Robotics Research*, vol. 38, no. 4, pp. 451-485, 2019.

5. Haokun Kang, Caishan Liu, and Yan-Bin Jia. Inverse dynamics and energy optimal trajectories for a wheeled mobile robot. *International Journal of Mechanical Sciences,* vol. 134, pp. 576-588, 2017.

6. Yan-Bin Jia and Feifei Wang. Analysis and computation of two body impact in three dimensions. *ASME Journal of Computational and Nonlinear Dynamics*, vol. 12, no. 4, pp. 04012-1, 2017.

7. Yan-Bin Jia. Planning the initial motion of a free sliding/rolling ball. *IEEE Transactions on Robotics*, vol. 32, no. 3, pp. 566-582, 2016.

8. Huan Lin, Feng Guo, Feifei Wang, and Yan-Bin Jia. Picking up a soft 3D object by ``feeling" the grip. *International Journal of Robotics Research*, vol. 34, no. 11, pp. 1361-1384, 2015.

9. Yan-Bin Jia, Feng Guo, and Huan Lin. Grasping deformable planar objects: squeeze, stick/slip analysis, and energy-based optimalities. *International Journal of Robotics Research*, vol. 33, no. 6, pp. 866-897, 2014.

10. Jiao Wang, Caishan Liu, Yan-Bin Jia, and Daolin Ma. Rachet rotation of a 3D dimer on a vibrating plate. *The European Physics Journal E*, vol. 37, no. 1, pp. 142-154, 2014.

11. Yan-Bin Jia. Three-dimensional impact: energy-based modeling of tangential compliance. *International Journal of Robotics Research*, vol. 32, no. 1, pp. 56-83, 2013.

12. Yan-Bin Jia, Matthew T. Mason, and Michael A. Erdmann. Simultaneous impacts: a state transition diagram approach. *International Journal of Robotics Research*, vol. 32, no. 1, pp. 84-114, 2013.

13. Rinat Ibrayev and Yan-Bin Jia. Recognition of curved surfaces from “one-dimensional” tactile data. *IEEE Transactions on Automation Science and Engineering*, vol. 9, no. 3, pp. 613-621, 2012.

14. Jiang Tian and Yan-Bin Jia. Modeling deformations of general parametric shells grasped by a robot hand. *IEEE Transactions on Robotics*, vol. 26, no. 5, pp. 837-852,

2010. (Finalist for the **2010 IEEE Transactions on Robotics King-Sun Fu Memorial Best Paper Award**).

15. Yan-Bin Jia and Jiang Tian. Surface patch reconstruction from "one-dimensional" tactile data. IEEE Transactions on Automation Science and Engineering, vol. 7, no. 2, pp. 400-407, 2010.
16. Rinat Ibrayev and Yan-Bin Jia. Semi-differential invariants for tactile recognition of algebraic curves. *International Journal of Robotics Research*, vol. 24, no. 11, pp. 951-969, 2005.
17. Yan-Bin Jia. Localization of curved parts through continual touch. *IEEE Transactions on Robotics*, vol. 21, no. 4, pp. 726-733, 2005.
18. Yan-Bin Jia. Computation on parametric curves with an application in grasping. *International Journal of Robotics Research*, vol. 23, no. 7-8, pp. 825-855, 2004.
19. Yan-Bin Jia and Michael Erdmann. Pose and motion from contact. *International Journal of Robotics Research*, vol. 18, no. 5, pp. 466-490, 1999.
20. Yan-Bin Jia and Michael Erdmann. Geometric sensing of known planar shapes. *International Journal of Robotics Research*, vol. 15, no. 4, pp. 365-392, 1996.

## Book Chapters

21. Yan-Bin Jia. Energy-based modeling of tangential compliance in 3-dimensional impact. In *Algorithmic Foundations of Robotics IX*, D. Hsu *et al.* (eds.), pp. 267-284, Springer, 2010. Also presented at the *Ninth International Workshop on Algorithmic Foundations of Robotics*, Singapore, December 2010.
22. Yan-Bin Jia, Matthew Mason, and Michael Erdmann. A state transition diagram for simultaneous collisions with application in billiard shooting. In *Algorithmic Foundations of Robotics VIII*, G. Chirikjian *et al.* (eds.), pp. 135-150, Springer, 2010. Also presented at the *Eighth International Workshop on Algorithmic Foundations of Robotics*, Guanajuato, Mexico, December 2008.
23. Yan-Bin Jia and Rinat Ibrayev. Semi-differential invariants for recognition of algebraic curves. In *Algorithmic Foundations of Robotics VI*, M. Erdmann *et al.* (eds.), pp. 267-282, Springer, 2005. Also presented at the *Sixth International Workshop on Algorithmic Foundations of Robotics*, Zeist, the Netherlands, July 2004.
24. Yan-Bin Jia. Computation on parametric curves with applications in localization and grasping. In *Algorithmic Foundations of Robotics V*, J.-D. Boissonnat *et al.* (eds.), pp. 329-345, Springer-Verlag, Berlin Heidelberg, 2004.
25. Yan-Bin Jia and Michael Erdmann. Local observability of rolling. In *Robotics: The Algorithmic Perspective*, P. K. Agarwal *et al.* (eds.), pp. 251-263, A. K. Peters, Boston, 1998.
26. Yan-Bin Jia and Michael Erdmann. The complexity of sensing by point sampling. In *Algorithmic Foundations of Robotics*, K. Goldberg et al. (eds.), pp. 283-300, A. K. Peters, Boston, 1995.

## Refereed Conference and Workshop Papers

27. Yuechuan Xue and Yan-Bin Jia. A dynamic finger gait via pivoting and regulating contact forces smoothly. Submitted to the IEEE/RSJ International Conference on Intelligent Robots and Systems. Kyoto, Japan, Oct 23-27, 2022.

28. Xiaoqian Mu and Yan-Bin Jia. Physical property estimation and knife trajectory optimization during robotic cutting. Accepted to the *IEEE International Conference on Robotics and Automation*, Philadelphia, PA, May 23-27 2022.

29. Prajjwal Jamdagni and Yan-Bin Jia. Robotic slicing of food and vegetables: modeling the effects of fracture toughness and knife geometry. In Proceedings of the *IEEE International Conference on Robotics and Automation*, pp. 6607-6613, Xi'an, China, May 30-Jun 5, 2021.

30. Yuechuan Xue and Yan-Bin Jia. Gripping a kitchen knife from the cutting board. In Proceedings of the *IEEE/RSJ International Conference on Intelligent Robots and Systems*, pp. 9226-9231, Las Vegas, Oct 25-29, 2020.

31. Prajjwal Jamdagni and Yan-Bin Jia. Robotic cutting of solids: fracture mechanics based modeling using the FEM. In Proceedings of the *IEEE/RSJ International Conferences on Intelligent Robots and Systems*, pp. 8246-8251, Macau, China, November 3-8, 2019.

32. Xiaoqian Mu, Yuechuan Xue, and Yan-Bin Jia. Robotic cutting: Mechanics and control of knife motion. In Proceedings of the *IEEE International Conference on Robotics and Automation*, pp. 3066-3072, Montreal, Canada, May 20-24, 2019.

33. Yan-Bin Jia and Yuechuan Xue. Dexterous manipulation by two fingers with coupled joints. In Proceedings of the *IEEE International Conference on Robotics and Automation*, pp. 3172-3179, Brisbane, Australia, May 21-25, 2018.

34. Matthew Gardner, Yan-Bin Jia, and Huan Lin. Batting flying objects to the target in 2D. In Proceedings of the *IEEE/RSJ International Conference on Intelligent Robots and Systems*, pp. 3225-3232, Daejeon, Korea, Oct 9-14, 2016.

35. Feifei Wang, Huan Lin, and Yan-Bin Jia. Computational Modeling of N-body Collisions with Simulation and Experiment. In Proceedings of the *IEEE/RSJ International Conference on Intelligent Robots and Systems*, pp. 5376-5381, Hamburg, Germany, Sep 28 - Oct 3, 2015.

36. Yan-Bin Jia. Planning the Motion of Sliding and Rolling Sphere. In Proceedings of the *IEEE International Conference on Robotics and Automation*, pp. 2396-2402, Seattle, WA, 2015.

37. Feng Guo and Yan-Bin Jia. Planning Finger Movements to Lift up Deformable 2D Objects. In Proceedings of the *IEEE International Conference on Robotics and Automation*, pp. 3696-3701, Seattle, WA, 2015.

38. Huan Lin, Feng Guo, Feifei Wang, and Yan-Bin Jia. Picking up soft 3D objects with two fingers. In Proceedings of the *IEEE International Conference on Robotics and Automation*, pp. 3656-3661, Hong Kong, China, May 31 - Jun 5, 2014.

39. Yan-Bin Jia, Huan Lin, and Feng Guo. Optimal two-finger squeezing of deformable objects. In Proceedings of the *IEEE International Conference on Intelligent Robots and Systems*, pp. 3514-3519, Tokyo, Japan, Nov 3-8, 2013.

40. Feng Guo, Huan Lin, and Yan-Bin Jia. Squeeze grasping of deformable planar objects with segment contacts and stick/slip analysis. In Proceedings of the *IEEE International Conference on Robotics and Automation*, pp. 3721-3726, Karlsruhe, Germany, May 5-9, 2013.

41. Yan-Bin Jia, Jiang Tian, and Feng Guo. On two-finger grasping of deformable planar objects. In Proceedings of the *IEEE International Conference on Robotics and Automation*, pp. 5261-5266, Shanghai, China, May 9-13, 2011.

42. Yan-Bin Jia. Energy-based modeling of tangential compliance in 3-dimensional impact. Presented at the *Ninth International Workshop on Algorithmic Foundations of Robotics*, Singapore, December 13-15, 2010.

43. Jiang Tian and Yan-Bin Jia. Modeling deformable shell-like objects grasped by a robot hand. In Proceedings of the *IEEE International Conference on Robotics and Automation*, pp. 1297-1302, Kobe, Japan, May 12-17, 2009.

44. Yan-Bin Jia, Matthew T. Mason, and Michael A. Erdmann. A state transition diagram for simultaneous collisions with application in billiard shooting. Presented at the *Eighth International Workshop on Algorithmic Foundations of Robotics*, Guanajuato, Mexico, December, 2008.

45. Yan-Bin Jia and Jiang Tian. Deformations of general parametric shells: computation and robot experiment. In Proceedings of the *IEEE/RSJ International Conference on Intelligent Robotics and Systems*, pp. 1796-1803, Nice, France, Sep 22-26, 2008.

46. Rinat Ibrayev and Yan-Bin Jia. Surface recognition by registering data curves from touch. In Proceedings of the *IEEE/RSJ International Conference on Intelligent Robots and Systems*, pp. 55-60, Beijing, PRC, Oct 9-15, 2006.

47. Yan-Bin Jia, Liangchuan Mi, and Jiang Tian. Surface patch reconstruction via curve sampling. In Proceedings of the *IEEE International Conference on Robotics and Automation*, pp. 1371-1377, Orlando, FL, May 16-18, 2006.

48. Liangchuan Mi and Yan-Bin Jia. High precision contour tracking with a joystick sensor. In Proceedings of the *IEEE/RSJ International Conference on Intelligent Robots and Systems*, pp. 804-809, Sendai, Japan, Sep 28 - Oct 2, 2004.

49. Yan-Bin Jia and Rinat Ibrayev. Semi-differential invariants for recognition of algebraic curves. Presented at the *Sixth International Workshop on Algorithmic Foundations of Robotics*, Utrecht/Zeist, The Netherlands, July 11-13, 2004.

50. Rinat Ibrayev and Yan-Bin Jia. Tactile recognition of algebraic shapes using differential invariants. In *Proceedings of the IEEE International Conference on Robotics and Automation*, pp. 1548-1553, New Orleans, LA, Apr 26-May 1, 2004.

51. Yan-Bin Jia. Contact sensing for parts localization: sensor design and experiments. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems*, pp. 516-522, Las Vegas, NV, Oct 27-31, 2003.

52. Yan-Bin Jia. Computation on parametric curves with applications in localization and grasping. Presented at the *Fifth International Workshop on Algorithmic Foundations of Robotics*, Nice, France, Dec. 15-17, 2002.

53. Yan-Bin Jia. Curvature-based computation of antipodal points. In *Proceedings of the IEEE International Conference on Robotics and Automation*, pp. 1571-1577, Washington D.C., May 11 - 15, 2002.

54. Yan-Bin Jia. Localization on curved objects using tactile information. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems*, pp. 701-706, Maui, HI, Oct 29 - Nov 3, 2001.

55. Yan-Bin Jia. Grasping curved objects through rolling. In *Proceedings of the IEEE International Conference on Robotics and Automation*, pp. 377-382, San Francisco, CA, May 2000.

56. Yan-Bin Jia and Michael Erdmann. Observing pose and motion through contact. In *Proceedings of the IEEE International Conference on Robotics and Automation* , pp. 723-729, Leuven, Belgium, May 1998.

57. Yan-Bin Jia and Michael Erdmann. Local observability of rolling. Presented at the *Third International Workshop on the Algorithmic Foundations of Robotics*, Houston, TX, March 1998. Also in *Robotics: The Algorithmic Perspective*, P. K. Agarwal *et al.* (eds.), pp. 251-263, A. K. Peters, Boston, 1998.

58. Yan-Bin Jia and Michael Erdmann. Pose from pushing. In *Proceedings of the IEEE International Conference on Robotics and Automation*, pp. 165-171, Minneapolis, MN, Apr 1996.

59. Yan-Bin Jia. On computing optimal planar grasps. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems*, pp. 3:427-434, Pittsburgh, PA, August 1995.

60. Yan-Bin Jia and Michael Erdmann. Sensing polygon poses by inscription. In *Proceedings of the IEEE International Conference on Robotics and Automation*, pp. 1642-1649, San Diego, CA, May 1994.

## Invited Presentations

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|---|---|
| Sep 27, 2021 | Second Workshop on Robotic Manipulation of Deformable Objects: Challenges in Perception, Planning and Control for Real-World Applications (RoMaDO-RA), IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Prague, Czech Republic. |
| Jun 3, 2021 | Workshop on High Dynamic Motion Generation, IEEE International Conference on Robotics and Automation (ICRA), Xi'an, China. |
| Feb 22, 2021 | CITRIS People and Robots Seminar, University of California at Berkeley. |

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| Dec 3, 2020 | Panelist, Forum on Robotic Food Manipulation Challenge, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Las Vegas, 2020. |
| Jul 16, 2019 | Shenyang Institute of Automation, Chinese Academy of Sciences, Shengyang, Liaoning, China. |
| Jul 11, 2019 | Theoretical Mechanics Group, School of Aeronautic Science and Engineering, Beihang University, Beijing, China. |
| Jul 5, 2019 | Department of Mechanics and Engineering Science, Peking University, Beijing, China. |
| May 19, 2018 | Research group talk, Department of Aeronautics and Astronautics, Peking University, Beijing, China. |
| Oct 17, 2016 | Computation and Applied Mathematics Seminar, Department of Mathematics, Iowa State University. |
| Apr 22, 2016 | Digital Technology Center, University of Minnesota, Minneapolis, MN. |
| Jan 14, 2016 | Department of Mechanics and Engineering Science, Peking University, Beijing, China. |
| Aug 13, 2014 | Chongqing Institute of Green and Intelligent Technology, Chinese Academy of Sciences, Chongqing, China. |
| Jul 11, 2014 | School of Computer Science and Engineering, Beijing Institute of Technology, Beijing, China. |
| Jun 5, 2014 | Workshop on Soft Robots, IEEE International Conference on Robotics and Automation, Hong Kong, China. |
| Jul 23, 2013 | Department of Aeronautics and Astronautics, Peking University, Beijing, China. |
| Jul 12, 2013 | Chengdu Information Technology Co., Ltd., Chinese Academy of Sciences, Chengdu, China. |
| Sep 27, 2012 | Department of Computer Science, Iowa State University |
| May 10, 2012 | School of Computer Science and Engineering, Beijing Institute of Technology, Beijing, China. |
| May 9, 2012 | Department of Mechanics and Aerospace Engineering, Peking University, Beijing, China. |
| May 8, 2012 | Institute of Automation, Chinese Academy of Sciences, Beijing, China. |
| Feb 20, 2012 | Department of Electrical and Computer Engineering, Iowa State University. |
| Jul 28, 2011 | Chengdu Information Technology Co., Ltd., Chinese Academy of Sciences, Chengdu, China. |
| Apr 19, 2011 | Symposium on Theory, Analysis, and Design of Shell Structures, International Conference on Computational & Experimental Engineering and Sciences, Nanjing, China. |
| Sep 2, 2010 | Department of Computer Science, Iowa State University |
| May 13, 2010 | Mathematics Mechanization Research Center, Institute of Systems Science, Chinese Academy of Sciences, Beijing, China. |
| Jun 10, 2009 | School of Computer Science and Technology, Beijing Institute of Technology, Beijing, China. |
| Jan 7, 2009 | School of Automation Engineering, University of Electronic Science and Engineering of China, Chengdu, China. |

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|---|---|
| Dec 15, 2008 | School of Computer Science and Technology, Beijing Institute of Technology, Beijing, China. |
| May 25, 2007 | College of Computer Science, Sichuan University, Chengdu, China. |
| Apr 25, 2007 | Foundations of Robotics Seminar, The Robotics Institute, Carnegie Mellon University, Pittsburgh, PA. |
| Oct 6, 2006 | Manipulation Group Seminar, Department of Computer Science, Stanford University, Stanford, CA. |
| Jun 23, 2006 | Chengdu Information Technology Co., Ltd., Chinese Academy of Sciences, Chengdu, China. |
| Aug 26, 2005 | Robotics Institute Seminar, Carnegie Mellon University, Pittsburgh, PA. |
| Jun 16, 2005 | Chengdu Information Technology Co., Ltd., Chinese Academy of Sciences, Chengdu, China. |
| May 16, 2005 | Mathematics Mechanization Research Center, Institute of Systems Science, Chinese Academy of Sciences, Beijing, China. |
| Mar 17, 2005 | AI, Vision & Robotics Seminar, Department of Computer Science, University of Illinois at Urbana-Champaign, Urbana, IL. |
| May 25, 2004 | National Laboratory for Intelligence Technology and Systems, Tsinghua University, Beijing, China. |
| Nov 15, 2002 | Robotics Seminar, University of Minnesota, Minneapolis, MN |
| Jan 21, 2000 | Department of Computer Science, New York University, New York City, NY. |
| Oct 28, 1999 | Department of Computer Science, Iowa State University. |
| May 1999 | Workshop on Integrating Sensors into Motion Planning (declined due to schedule conflict), International Conference on Robotics and Automation. |
| Feb 11, 1999 | Department of Computer Science, Iowa State University. |
| May 1998 | Xerox Palo Alto Research Center, Palo Alto, CA. |

## Current Students

Prajjwal Jamdagni (Ph.D. student, CS)
Ling Tang (Ph.D. student, CS)
Yuechuan Xue (Ph.D. student, CS)
Ian Gonzalez-Alfonzo (M.S. student, CS)

## Ph.D. Dissertations Supervised

| | |
|---|---|
| 2021 | Xiaoqian Mu, *Dexterous Robotic Manipulation: Batting and Cutting*. |
| 2020 | Matthew Gardner, *Robotic Batting and Motion Estimation of Objects in Free Flight* (now at Boston Dynamics, Mountain View, California). |
| 2017 | Feifei Wang, *Computational Modeling of Impact and Deformation* (now at the Walt Disney Company, Orlando, Florida). |
| 2015 | Huan Lin, *Robot Dexterity: From Deformable Grasping to Impulsive Manipulation* (now at a new robot company in Nanjing, China). |

2014 Feng Guo, *Displacement-based Grasping of Deformable Objects* (now at Facebook, Inc., Menlo Park, CA).

2010 Jiang Tian, *Modeling and Grasping of Thin Deformable Objects* (now at Siemens, Inc., Beijing, China).

2008 Rinat Ibrayev, *Model-based Recognition of Curves and Surfaces Using Tactile Data* (now at Sony Ericsson, San Jose, CA).

## M.S. Theses Supervised

2021 Shengwen Xie, *Mounting a Screwdriver onto a Screw with Hybrid Control*.

2019 Guangyu Hou, *Finding the Minimum Illuminating Directions for a Polyhedron*.

2017 Wangyujue Hong, *Modeling of Deformable Cutting Using Extended Finite Element Method (XFEM)*.

2014 Jared Hays, *Generating a Quality 2D Mesh for Deformable Modeling*.

2014 Feifei Wang, *Grasping of Deformable 3D Objects under Gravity*.

2013 Huan Lin, *Optimal Grasping of Soft Objects with Two Robotic Fingers*.

2012 Feng Guo, *Displacement-Based Two-Finger Grasping of Deformable Planar Objects*.

2012 Henri Bai, *Software for Simulated CT Scanner Table Control in Bolus-Chasing Angiography* (now at Yelp, Inc.).

2011 HyunTae Na, *An Online Algorithm for Matching Noisy Space Curves with Statistical Error Analysis*.

2011 Theresa Driscoll, *Complete Coverage Path Planning in an Agricultural Environment* (now at John Deer).

2007 Jiang Tian, *Surface Patch Reconstruction from Tactile Data Curves*.

2005 Liangchuan Mi, *Shape Reconstruction from Robot Tactile Sensing* (now at nVIDIA).

2004 Rinat Ibrayev, *Tactile Recognitoin of Algebraic Curves Using Semi-differential Invariants*.

## Undergraduate Research Guidance

Bryce Hall, B.S. student in CS
Karter Krueger, B.S. in SE, 2021.
Marcelo Abrantes, B.S. in EE/Math, 2021.
Adam Willerth, B.S. in Math/CS, 2019.
Shivakarthhi Sundar, B.S. in ME/CS, 2019.
Zachary Glanz, B. S. in Cpr E, 2018.
Avery Dempsey, Mechanical Engineering (Northwestern University), Summer 2017.
Jacob Stimes, B.S. in Software Engineering, 2017.
Sean Strickland, B. S. in Software Engineering, 2013.
Trenton Anagnostopoulos, B. S. in CS, 2012.
Rex Fernando, B. S. in CS, 2013.
Neil Kronlage, B.S. in Cpr E, 2004 (now at Microsoft).

Stephen Collins, B.S. in Cpr E, 2003.
Jon Van Dis, B.S. in CS, 2002.
David Persky, B.S. in CS, 2001; M.S. from U. Wisconsin-Madison).
Joe Mesterhazy B.S. in CS, 2001.
Brian Grice, B.S. in ME, 2000.

## Thesis Committees

Weisi Fan, Ph.D. student (CS).
Joseph Clanin, Ph.D. student (CS).
Amir Niaraki, Ph.D. student (CS).
Zachary Glanz, Ph.D. student (CS).

Jesse Lane, Ph.D. student (ME).

Tianshuang Gao, Ph.D. in CS, Nov 2021.
Joseph Clanin, M.S. in CS, Jul 2021.
Daniel Schimpf, Ph.D. in IMSE, Apr 2021.
Supriya Raul, M.S. in CS, Feb 2021.
Guillermo Laguana, Ph.D. in ME, Nov 2019.

David Wehr, M.S. in CS, Aug 2019.
Guangyu Hou, M.S. in CS, Apr 2019.

Chuanhai Zhang, Ph.D. in CS, Mar 2019.

Yue Zu, Ph.D. in Aero E, Nov 2017.

Rui Zou, Ph.D. in ME, Apr 2017.
Shengyang Liu, M.S. in CS, Nov 2017.
Yan Tian, M.S. in ME, Nov 2016.
Yetian Chen, Ph.D. in CS, Jul 2016.
Jeremy Bennet, Ph.D. in HCI, Jul 2016.
Hyntae Na, Ph.D. in CS, Apr 2016.
Mengzhe Zhang, M.S.  in ME, Nov 2014.
Beiwen Li, M.S. in ME, Apr 2014.
Jivko Sinapov, Ph.D. in CS, Nov 2013.
Jeremy Bennet, Ph.D. in HCI, Nov 2013.
Yajun Wang, Ph.D. in ME, Oct 2013.
Rituparna Sarkar, M.S. in ECE, Aug 2012.
DongHo Hong, Ph.D. in CS, Jun 2012.
Melissa Wickham, M.S. in ME, Nov 2010.
Samarjit Das, Ph.D. in ECE, Nov 2010.
Oksana Yakhnenko, Ph.D. in CS, Nov 2009.
Jeremy Bennett, M.S. in HCI, Apr 2009.
Adam Bogenrief, M.S. in ME, May 2006.
John Burnett, M.S. in ME, May 2006.
Mike Bezdek, M.S. in Cpr E, May 2006.
Nurzhan Ustemirov, M.S. in CS, Apr 2006.
Dongheng Li, M.S. in HCI, Apr 2006.
Siddhartha Srinivasa, Ph.D. in Robotics, CMU, Aug 2005.
Heng Xu, M.S. in Cpr E, ISU, Dec 2004.
Jason Timmerman, M.S. in Cpr E, ISU, May 2004.
Justin Hare, M.S. in CS, ISU, Apr 2004.

Anna Atramentov, M.S. in CS, ISU, Jun 2003.
Libo Yang, M.S. in CS, ISU, Oct 2001.
Peng Cheng, M.S. in CS, ISU, Jul 2001.
Naci Zafer, Ph.D. in ME, ISU, Jun 2000.
Ning Meng, Ph.D. in ME, ISU, Jul 2000

## Educational Services

| | |
|---|---|
| 2020- | Member, Computer Science Governance Committee. |
| 2018- | Colloquium Coordinator, Computer Science Department. |
| 2015- | Member, Computer Science Outreach Committee. |
| 2017-2018 | Member, Computer Science Promotion and Tenure Committee. |
| 2014-2018 | Webmaster, Computer Science Department |
| 2013-2014 | Chair, Computer Science Award Committee. |
| 2007- | Member, Computer Science Graduate Committee |
| 2007-2011 | Chair, Computer Science Graduate Admissions Committee |
| 2005-2006 | Member, Computer Science Graduate Admissions Committee |
| Mar 2003 | Team coach of ISU Cy-Random (43th place) in 2003 ACM/ICPC International Collegiate Programming Contest |
| Nov 2002 | Team coach of ISU Cy-Random (3rd place) in 2002 ACM North Central North America Programming Contest |
| 2001-2004 | Advisor, ISU Computer Science Club |
| 2000-2004 | ISU School of Liberal Arts & Sciences Faculty Assembly. |

## Course Development

*Problem Solving Techiques for Applied Computer Science* (Com S 477/577), Iowa State University.

## Course Instruction

Iowa State University:

*Introduction to Data Structures* [Com S 228] (Fall 2012, 2015, 2016; Springs 2005, 2012, 2014, 2015, 2018, 2019)

*Advanced Programming Techniques* [Com S 229] (Falls 2009, 2011; Springs 2006, 2008, 2009 )

*Design and Analysis of Algorithms* [Com S 311] (Springs 2000-2003, 2011)

*Discrete Computational Structures* [Com S 330] (Falls 1999-2001)

*Computational Geometry* [Com S 418/518] (Springs 2005, 2006, 2010, 2015, 2018, 2019)

*Principles of Artificial Intelligence* [Com S 472/572] (Fall 2020)

*Problem Solving Techniques for Applied Computer Science* [Com S 477/577] (Falls 2002-2005, 2007, 2008, 2010, 2012-2020)

University of Minnesota:

*Data Structures and Algorithms I* (CSci 3321-ext) [Spring 1999]
*Introduction to Object Oriented Programming Using C++* (CSci 5113) [Spring 1999]
*Discrete Structures of Computer Science* (CSci 3311) [Winter 1999]

Carnegie Mellon University:

*Mathematical Fundamentals for Robotics* (16-811) [Spring 1998]

## Teaching Assistant

*Artificial Intelligence* (15-381), Carnegie Mellon University, Fall 1992.
*The PASCAL Language*, University of Science and Technology of China, Spring 1988.

## Skills

| | |
|---|---|
| Programming languages | C++, C, Java, Lisp, Pascal, Fortran, Prolog, Basic, Modula-2, assembly languages (68000, Z80/8000), V+ (robot programming language). |
| Operating systems | UNIX, Linux, Windows 7 & XP & 2000 & NT, MS-DOS, Macintosh. |
| Theory | Algorithms, computational geometry, differential geometry, projective geometry, nonlinear control systems, theoretical mechanics, elasticity theory, finite element methods, impact mechanics, numerical methods, optimization, combinatorics, computability and complexity, probabilities, mathematical and temporal logics, program semantics. |

## Other Work Experience

| | |
|---|---|
| Summer 1996 | Research intern, Interval Research Corporation, Palo Alto, CA. |
| 1993-1997 | Tourguide, the Robotics Institute, Carnegie Mellon University. |
| 1988-1989 | Graduate research assistant, University of Science and Technology of China (USTC), Hefei, Anhui, P.R. China |
| 1989-1990 | Graduate research assistant, Institute of Software (IS), Chinese Academy of Sciences (CAS), Beijing, P.R. China. |

## Personal Data

Born March 1969, Chengdu, Sichuan, P.R. China.
Citizenship: P.R. China.
Permanent Residency: USA.