

# Jing Dong

---

## CONTACT INFORMATION

Address: 801 Atlantic Dr NW, 273B, Atlanta, GA 30332  
Email: [jdong@gatech.edu](mailto:jdong@gatech.edu)  
Homepage: [jdong.info](http://jdong.info)

## RESEARCH INTEREST

My current research interest covers various topics in robotics and computer vision, include *simultaneous localization and mapping (SLAM)*, *3D reconstruction*, and *real-time online motion planning*.

## EDUCATION

### Georgia Institute of Technology, Atlanta, GA

- Ph.D., Computer Science Aug 2013 - Aug 2018 (Expect)
- Advisor: Prof. Frank Dellaert & Prof. Byron Boots
- GPA: 3.90/4.0

### Tsinghua University, Beijing, China

- B.E., Engineering Mechanics and Aerospace Engineering Aug 2008 - July 2012
- GPA: 91.8/100, Rank: 3/84
- Graduate with honors

## RESEARCH EXPERIENCE

### Graduate Research Assistant

Georgia Institute of Technology, Atlanta, GA Aug 2013 - Present

- 4D Agriculture: Time-series 3D reconstruction/crop analysis for precision agriculture
  - Built a camera/IMU/GPS data collection system, collected 4 years datasets in Tifton, GA.
  - Proposed time-series 3D reconstruction (4D) algorithm, and implemented in C++.
  - Working on machine learning algorithms for yield prediction from 4D reconstruction results.
- Real-time motion planning as a probabilistic inference framework
  - Proposed Gaussian process (GP) based motion planning algorithm for real-time and online replanning, and implemented in C++.
  - Proposed Kinect volumetric 3D reconstruction for planning, and implemented in C++/CUDA.
- Real-time distributed and cooperative multi-robot mapping
  - Proposed an online and real-time multi-robot SLAM algorithm.
  - Implemented in C++, and tested on CMU 2D laser multi quadrotor dataset.

### Research Intern

Microsoft Corporation, Redmond, WA May 2017 - Aug 2017

- Deep learning based feature learning and matching for time-series and multi-spectral images
  - Proposed CNN image feature learning algorithm, and implemented in Python/TensorFlow.
- Time-series and multi-spectral 3D reconstructions for precision agriculture
  - Implemented time-series and multi-spectral 3D reconstruction algorithms in C++.

### Intern Robotics

iRobot Corporation, Bedford, MA May 2015 - Aug 2015

- Computer vision based 3D mapping and localization

### Visiting Student

Carnegie Mellon University, Pittsburgh, PA Jun 2014 - Aug 2014

- Multi quadrotors systems for distributed and cooperative mapping
  - Built UDP/Wi-Fi communication protocol for multi-quadrotor SLAM in C++.

### Hardware Engineer

Beijing Sonimed Technologies Co., Ltd., Beijing, China Jan 2013 - Jul 2013

- Hardware design of piezoelectric bleeding-less surgical instrument
  - Designed the ultrasonic power amplifier and main PCB for piezoelectric surgical cutter.
  - Tested and improved the hardware designs to meet EMC standards.

REFEREED  
JOURNAL AND  
CONFERENCE  
PUBLICATION  
(\*EQUAL CONTRIBUTION)

1. M. Mukadam\*, **J. Dong\***, F. Dellaert, B. Boots, STEAP: Simultaneous Trajectory Estimation and Planning. Submitted to *Autonomous Robots*, 2018.
2. **J. Dong**, M. Mukadam, B. Boots, F. Dellaert, Sparse Gaussian Processes on Matrix Lie Groups: A Unified Framework for Optimizing Continuous-Time Trajectories. Accepted in *IEEE International Conference on Robotics and Automation (ICRA)*, 2018.
3. M. Mukadam\*, **J. Dong\***, X. Yan, F. Dellaert, B. Boots, Continuous-Time Gaussian Process Motion Planning via Probabilistic Inference. Conditionally accepted in *International Journal of Robotics Research (IJRR)*, *ArXiv preprint 1707.07383*, 2017.
4. **J. Dong**, J. Burnham, B. Boots, G. Rains, F. Dellaert, 4D Crop Monitoring: Spatio-Temporal Reconstruction for Agriculture. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2017.
5. M. Mukadam, **J. Dong**, F. Dellaert, B. Boots, Simultaneous Trajectory Estimation and Planning via Probabilistic Inference. In *Robotics: Science and Systems (RSS)*, 2017.
6. **J. Dong**, M. Mukadam, F. Dellaert, B. Boots, Motion Planning as Probabilistic Inference using Gaussian Processes and Factor Graphs. In *Robotics: Science and Systems (RSS)*, 2016.
7. V. Indelman, E. Nelson, **J. Dong**, N. Michael, F. Dellaert, Incremental Distributed Inference from Arbitrary Poses and Unknown Data Association: Using Collaborating Robots to Establish a Common Reference. In *IEEE Control Systems Magazine*, 2016.
8. **J. Dong**, E. Nelson, V. Indelman, N. Michael, F. Dellaert, Distributed Real-time Cooperative Localization and Mapping using an Uncertainty-Aware Expectation Maximization Approach. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2015.

OTHER  
PUBLICATION

1. **J. Dong**, B. Boots, F. Dellaert, Sparse Gaussian Processes for Continuous-Time Trajectory Estimation on Matrix Lie Groups. *ArXiv preprint 1705.06020*, 2017.
2. M. Mukadam, **J. Dong**, F. Dellaert, B. Boots, STEAP: Towards Online Estimation and Replanning. In *RSS Workshop on POMDPs in Robotics*, 2017.
3. K. Ahlin *et al.*\*, Robotics for Spatially and Temporally Unstructured Agricultural Environments. Book chapter in *Robotics and Mechatronics for Agriculture*, 2017.
4. L. Carlone, **J. Dong**, S. Fenu, G. Rains, F. Dellaert, Towards 4D Crop Analysis in Precision Agriculture: Estimating Plant Height and Crown Radius over Time via Expectation-Maximization. In *ICRA Workshop on Robotics in Agriculture*, 2015.

SKILL

Programming: C++(4 years), C(8 years), MATLAB(8 years), Python(1 year), CUDA(2 years)  
Robotics software: ROS(4 years), OpenCV(6 years), GTSAM(4 years), TensorFlow(0.5 year)

TEACHING  
EXPERIENCE

**Georgia Institute of Technology**

Graduate Teaching Assistant

- CS 3630 - Introduction to Robotics and Perception (undergraduate level) Spring 2017
- CS 3600 - Introduction to Artificial Intelligence (undergraduate level) Spring 2015

PROFESSIONAL  
SERVICE

- Reviewer for Journals: *Autonomous Robots*
- Reviewer for Conferences: ICRA (2017, 2018), IROS (2015, 2016, 2017), AAMAS (2017)

AWARD

- Outstanding Graduate Honor, Tsinghua University 2012
- National Scholarship, Tsinghua University 2010, 2011
- First Class Scholarship in Academic Excellence, Tsinghua University 2009