

# Jeffrey Kane Johnson

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- SUMMARY** Dr. Johnson is a specialist in planning and control for multi-agent robotic systems, and has extensive professional experience developing and testing automated vehicle systems. He is an active member of the robotics community, and is currently involved with the development of the revised US National Robotics Roadmap and the forthcoming UL 4600 Standard for Safety for the Evaluation of Autonomous Products.
- EDUCATION**
- Indiana University**, Bloomington, IN June 2012–Sept. 2017  
*PhD in Computer Science*
- Indiana University**, Bloomington, IN Sept. 2009–June 2012  
*Master of Science in Computer Science*
- Trine University**, Angola, IN Aug. 1999–Dec. 2003  
*Bachelor of Science in Computer Science*
- WORK & EXPERIENCE**
- Mapless AI, Inc.** March 2020–Current  
*Principal*
- Research in applied artificial intelligence and autonomous system safety.
- Maeve Automation** Feb. 2019–March 2020  
*Research Project*
- Advanced, autonomy-based vehicle driver assistance systems
- Uber ATG**, Pittsburgh, PA Jan 2018–Feb. 2019  
*Senior Autonomy Engineer*
- Motion planning for urban automated vehicles
- Apple, Inc.**, Sunnyvale, CA Jan. 2016–May 2017  
*Engineer*
- Experimental algorithm and software development for autonomous systems
- Robert Bosch, LLC**, Palo Alto, CA Jan. 2014–Nov. 2015  
*Research Engineer*
- Lead development of motion planning/decision making for automated driving
- Robert Bosch, LLC**, Palo Alto, CA May 2013–Aug. 2013  
*Intern*
- Collision detection methods for optimization-based vehicle motion planning
- TRACLabs**, Houston, TX June 2012–Aug. 2012  
*Intern*
- Software toolkits for coordinated dual-arm manipulation
  - [http://personal.traclabs.com/~pbeeson/Dual\\_Arm/](http://personal.traclabs.com/~pbeeson/Dual_Arm/)
- Indiana University**, Bloomington, IN Sept. 2006–Sept. 2009  
*Web Developer, School of Journalism*
- Development of school web site and internal web-based applications

<b>AFFILIATIONS</b>	<b>IEEE Intelligent Vehicles Symposium - IV2020</b> <i>Associate Editor</i>	June 2020
	<b>Ensuring and Validating Safety for Automated Vehicles</b> <i>Workshop co-proposer</i> IEEE Intelligent Vehicles Symposium - IV2020	June 2020
	<b>US Robotics Roadmapping Workshop</b> <i>Member</i>	Aug. 2019–Current
	<b>STP: UL 4600 Standard for Safety for the Evaluation of Autonomous Products</b> <i>Stakeholder</i>	July 2019–Current
	<b>IEEE ITSS Technical Committee on Self Driving Automobiles</b> <i>Member</i>	Nov 2018–Current

#### TOOLING & TRAINING

**Programming Languages:** C++, Python, & R  
**Libraries/Environments:** ROS, OpenCV, PCL  
**Version Control:** Mercurial, Git  
**Platforms:** Linux (Ubuntu), macOS  
**Training:** Safe Driver Training (Simraceway, Sonoma, CA)

#### SELECTED WORKS

Full list with supplementary materials at: <http://jeffreykanejohnson.com>

- *The Colliding Reciprocal Dance Problem: A Mitigation Strategy with Application to Automotive Active Safety Systems*, American Control Conference (ACC) 2020
- *Safe Motion Planning under Partial Observability with an Optimal Deterministic Planner*, American Control Conference (ACC) 2020
- *On the Relationship Between Dynamics and Complexity in Multi-agent Collision Avoidance*, Autonomous Robots (AURO) 2018
- *Guest talk: Vision-based Navigation for Autonomous Vehicles*, IU Intelligent & Interactive Systems Talk Series
- *Selective Determinism for Autonomous Navigation in Multi-agent Systems*, PhD Dissertation 2017
- *Optimal Longitudinal Control Planning with Moving Obstacles*, IV 2013, with Kris Hauser
- *Minimizing Driver Interference Under a Probabilistic Safety Constraint in Emergency Collision Avoidance Systems*, ITSC 2012, with Kris Hauser
- *Optimal Acceleration-Bounded Trajectory Planning in Dynamic Environments Along a Specified Path*, ICRA 2012, with Kris Hauser
- *Semiautonomous Longitudinal Collision Avoidance Using a Probabilistic Decision Threshold*, IROS11 International workshop on Perception and Navigation for Autonomous Vehicles in Human Environment, Sept. 2011, with Yajia Zhang and Kris Hauser

#### OPEN SOURCE PROJECTS

A collection of open source ROS libraries is maintained at the below address:  
[https://github.com/togaen/open\\_maeve](https://github.com/togaen/open_maeve)