

# Adam Eric Leeper

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## EXPERIENCE

**Software Engineer** - Google, Inc. Mountain View, CA **Sept. '14 - present**  
• Project Tango: Develop algorithms and applications for Visual- Inertial SLAM and sparse mapping.

**Senior Systems Engineer** - hiDOF, Inc., South San Francisco, CA **July '13 - Sept. '14**  
• Key software developer for major client. C++ system design, algorithm development, and build-system support.  
• Projects in wheeled vehicle motion planning, visual inertial navigation, and visual monocular SLAM.

**Research Intern** - Willow Garage, Inc., Menlo Park, CA **Sept. '10 - June '13**  
• Developed novel optimization-based controller and user interfaces for assisted collision-free teleoperation.  
• Conducted user experiments and authored papers published in major robotics conferences. robot teleoperation.

**Graduate Researcher** - Salisbury Robotics Lab, Stanford, CA **Aug. '08 - June '13**  
• Developed new algorithms for haptic rendering and robot control (in collaboration with Willow Garage).  
• Implemented miniature stereo camera sensor for a robot gripper (PCB design, mechanical hardware prototyping).

### Consulting:

**Motion Genesis, LLC** - Developed web-based visualization software for multi-body systems. **Spring '11 - Fall '13**  
**Applied Materials, Inc.** - Subcontracting consultant for robot motion visualization. **Fall '12**

## SKILLS

**Applied Math** - Expert in dynamics, kinematics, and 3D geometry as applied to robotics, simulation, and graphics.

**Software Languages** - C++ (6 years) in large, complex projects featuring multi-threaded, event-driven, and multi-process designs, with a focus on quality and maintainability. Proficient in Python, Javascript, and MATLAB.

**Software Tools** - Expert knowledge of ROS. Experience with Eigen, OpenMP, MoveIt!, PCL, OpenCV, OpenGL, Qt. Development in Ubuntu Linux (expert) and Windows (proficient) using version control (git, svn) and issue tracking.

**Electronics** - Circuit design/debugging, prototype PCB layout/fabrication, embedded systems.

**Hardware** - General machine shop rapid-prototyping skills, and proficient in CAD tools (Solidworks).

**Languages** - English (native), Spanish (fluent), French (proficient).

**Other** - Private pilot, recording engineer, bassist.

## EDUCATION

**Ph.D.** Mechanical Engineering under Professor Ken Salisbury, Stanford University, 3.94 GPA **June '13**  
**Thesis:** Robot Telemanipulation in Unstructured Environments: Sensors, Algorithms, Interfaces.

**M.S.** Mechanical Engineering, Stanford University, 3.97 GPA **March '09**

**B.S.** Engineering Physics, The University of Tulsa, 3.99 GPA **May '07**

## TEACHING

**Instructor:** ENGR 105 Controls, Stanford University, 72 students. **2015**

**Instructor:** ENGR 14 Statics, Stanford University, 77 students. **2014**

**Instructor:** ME 101 Dynamics, San Jose State University, 50 students. **2011, 2012, 2013**

**Instructor:** Programming and Robotics, EPGY Summer Institutes at Stanford. **2010**

## SELECTED PUBLICATIONS

**A. Leeper**, K. Hsiao, M. Ciocarlie, I. Sukan, and K. Salisbury. Methods for Collision-Free Arm Teleoperation in Clutter Using Constraints from 3D Sensor Data. 2013 International Conference on Humanoid Robots. October, 2013. Atlanta, Georgia.

**A. Leeper**, S. Chan, and K. Salisbury. Point Clouds Can Be Represented as Implicit Surfaces for Constraint-Based Haptic Rendering. ICRA, May 2012, St. Paul, MN.

**A. Leeper**, K. Hsiao, M. Ciocarlie, L. Takayama, D. Gossow. Strategies for Human-in-the-Loop Robotic Grasping. HRI, March 2012, Boston, MA.