

# SAMUEL B. SCHORR

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## EDUCATION

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- Stanford University**, Collaborative Haptics and Robotics in Medicine Lab, Stanford, CA *2013-Present*  
**Ph.D. candidate, Mechanical Engineering** (estimated graduation June 2017)  
**Link Foundation Modeling, Simulation, and Training Fellowship** (2016-2017)  
**NSF Graduate Research Fellowship** (2012-2016)  
**Stanford Mechanical Engineering Fellowship** (2011-2012)
- Stanford University**, Stanford, CA *2011-2013*  
**M.S. in Mechanical Engineering**, Mechatronics Depth
- University of Texas**, Austin, TX *2007-2011*  
**B.S. in Mechanical Engineering**, Minor in Business

## SKILLS

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- Robotic system feedback control and design
- Kinesthetic and tactile haptic feedback systems
- Mechatronics and embedded system design
- Mechanical system design and analysis (SolidWorks)
- Haptic virtual environment programming (C++)
- Data analysis and statistics (MATLAB)

## PROJECTS

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### **Skin Deformation for Sensory Substitution of Force in Teleoperation and Virtual Reality (Thesis)** 2013 - Present

- Design, simulation, and construction of tactile devices for both wearable and manipulator grounded applications.
- Implemented 3D tracking of fingers and device control to convey force feedback for teleoperation and virtual reality.
- Researched the ability of human participants to use 3-DoF skin deformation feedback for force-sensitive teleoperated and virtual tasks.
- Investigated human perception of stiffness, friction, and mass while manipulating objects in virtual reality with skin deformation feedback.

Key Publications (additional work at [www.samuelschorr.com](http://www.samuelschorr.com)):

1. S. B. Schorr and A. M. Okamura, "A wearable 3-degree-of-freedom skin deformation device for conveying force information in virtual reality," submitted to *IEEE Transactions on Haptics*.
2. S. B. Schorr and A. M. Okamura, "Fingertip tactile devices for virtual object manipulation and exploration," accepted to *ACM Conference on Human Factors in Computing Systems*, 2017.
3. S. B. Schorr, Z. F. Quek, I. Nisky, W. R. Provancher and A. M. Okamura, "Tactor-induced skin stretch as a sensory substitution method in teleoperated palpation," *IEEE Transactions on Human-Machine Systems*, vol. 45, no. 6, pp. 714-726, 2015.
4. S. B. Schorr, Z. F. Quek, W. R. Provancher and A. M. Okamura I. Nisky, W.R. Provancher and A. M. Okamura, "Environment perception in the presence of kinesthetic or tactile guidance virtual fixtures," in *ACM/IEEE International Conference on Human-Robot Interaction*, pp. 195-196, 2015.
5. S. B. Schorr, Z. F. Quek, W. R. Provancher and A. M. Okamura I. Nisky, W.R. Provancher and A. M. Okamura, "Tactile Skin Deformation Feedback for Conveying Environment Forces in Teleoperation," in *ACM/IEEE International Conference on Human-Robot Interaction Extended Abstracts*, pp. 195-196, 2015.
6. S. B. Schorr, Z. F. Quek, R. Y. Romano, I. Nisky, W. R. Provancher and A. M. Okamura, "Sensory Substitution via Cutaneous Skin Stretch Feedback," In *IEEE International Conference on Robotics and Automation*, pp. 2341-2346, 2013.

### **Android Integrated Gyro-Stabilized Camera Mount** September 2013 - December 2013

- Developed a gyro-stabilizing, actively-actuated camera mount for capturing leveled video from a moving platform.
- Gyro data was acquired from Android OS and used to model pitch and roll of any attached camera.

## WORK EXPERIENCE

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### **New Product Development Engineering Intern** March 2015 - September 2015 *Intuitive Surgical* *Sunnyvale, CA*

- Designed and constructed (prototyping through molding) novel mechanical and electromechanical systems for support of new products and tools.
- Developed methods for camera-tool registration and calibration during tool construction.

### **Natural Gas Upstream Engineer** May 2011 - August 2011 *ConocoPhillips* *Farmington, NM*

- Modeled a natural gas pipeline network using stored production data to determine locations where stagnant water was blocking gas production.
- Developed a water removal plan to recover \$600,000 in lost production.