

# Stanford

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## Jeannette Bohg

Assistant Professor of Computer Science

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### Bio

#### BIO

Jeannette Bohg is an Assistant Professor of Computer Science at Stanford University. She was a group leader at the Autonomous Motion Department (AMD) of the MPI for Intelligent Systems until September 2017. Before joining AMD in January 2012, Jeannette Bohg was a PhD student at the Division of Robotics, Perception and Learning (RPL) at KTH in Stockholm. In her thesis, she proposed novel methods towards multi-modal scene understanding for robotic grasping. She also studied at Chalmers in Gothenburg and at the Technical University in Dresden where she received her Master in Art and Technology and her Diploma in Computer Science, respectively. Her research focuses on perception and learning for autonomous robotic manipulation and grasping. She is specifically interesting in developing methods that are goal-directed, real-time and multi-modal such that they can provide meaningful feedback for execution and learning. Jeannette Bohg has received several awards, most notably the 2019 IEEE International Conference on Robotics and Automation (ICRA) Best Paper Award, the 2019 IEEE Robotics and Automation Society Early Career Award and the 2017 IEEE Robotics and Automation Letters (RA-L) Best Paper Award.

#### ACADEMIC APPOINTMENTS

- Assistant Professor, Computer Science

#### LINKS

- Personal Page: <https://web.stanford.edu/~bohg/>
- Interactive Perception and Robot Learning lab: [iprl.stanford.edu](http://iprl.stanford.edu)

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### Teaching

#### COURSES

##### 2019-20

- Principles of Robot Autonomy II: AA 174B, AA 274B, CS 237B, EE 260B (Win)
- Robot Perception and Decision-Making: Optimal and Learning-based Approaches: CS 336 (Aut)
- Robotics and Autonomous Systems Seminar: AA 289, CS 529 (Aut, Win)
- Topics in Advanced Robotic Manipulation: CS 326 (Aut)

##### 2018-19

- Introduction to Robotics: CS 223A, ME 320 (Win)
- Topics in Advanced Robotic Manipulation: CS 326 (Aut)

##### 2017-18

- Introduction to Robotics: CS 223A, ME 320 (Win)

- Topics in Advanced Robotic Manipulation: CS 326 (Aut)

## STANFORD ADVISEES

Peter Zachares

### Doctoral Dissertation Reader (AC)

Jingwei Huang, Patrick Slade

### Orals Evaluator

Maxime Bouton, Jingwei Huang

### Doctoral Dissertation Advisor (AC)

Negin Heravi, Michelle Lee, Lin Shao, Mengyuan Yan

### Master's Program Advisor

Justin Amezcua, Yifeng Lin, Yuanhang Luo, Nishant Rai, Dilara Soylu, Joseph Taglic, Kevin Zakka

### Doctoral Dissertation Co-Advisor (AC)

Claire Chen, Shushman Choudhury, Mike Salvato

### Doctoral (Program)

Toki Migimatsu, Krishnan Srinivasan

## Publications

## PUBLICATIONS

- **Object-Centric Task and Motion Planning in Dynamic Environments** *IEEE ROBOTICS AND AUTOMATION LETTERS*  
Migimatsu, T., Bohg, J.  
2020; 5 (2): 844–51
- **Predicting grasp success in the real world - A study of quality metrics and human assessment** *ROBOTICS AND AUTONOMOUS SYSTEMS*  
Rubert, C., Kappler, D., Bohg, J., Morales, A.  
2019; 121
- **Making Sense of Vision and Touch: Self-Supervised Learning of Multimodal Representations for Contact-Rich Tasks**  
Lee, M. A., Zhu, Y., Srinivasan, K., Shah, P., Savarese, S., Li Fei-Fei, Garg, A., Bohg, J., IEEE, Howard, A., Althoefer, K., Arai, F., Arrichiello, F., Caputo, et al  
IEEE.2019: 8943–50
- **Leveraging Contact Forces for Learning to Grasp**  
Merzic, H., Bogdanovic, M., Kappler, D., Righetti, L., Bohg, J., IEEE, Howard, A., Althoefer, K., Arai, F., Arrichiello, F., Caputo, B., Castellanos, J., Hauser, K., et al  
IEEE.2019: 3615–21
- **Motion-Based Object Segmentation Based on Dense RGB-D Scene Flow** *IEEE ROBOTICS AND AUTOMATION LETTERS*  
Shao, L., Shah, P., Dwaracherla, V., Bohg, J.  
2018; 3 (4): 3797–3804
- **Interactive Perception: Leveraging Action in Perception and Perception in Action** *IEEE TRANSACTIONS ON ROBOTICS*  
Bohg, J., Hausman, K., Sankaran, B., Brock, O., Kragic, D., Schaal, S., Sukhatme, G. S.  
2017; 33 (6): 1273–91
- **Reports on the 2017 AAAI Spring Symposium Series** *AI MAGAZINE*  
Bohg, J., Boix, X., Chang, N., Chu, V., Churchill, E. F., Fang, F., Feldman, J., Gonzalez, A. J., Kido, T., Lawless, W. F., Montana, J. L., Ontanon, S., Sinapov, et al  
2017; 38 (4): 99–106
- **Probabilistic Articulated Real-Time Tracking for Robot Manipulation** *IEEE ROBOTICS AND AUTOMATION LETTERS*

- Cifuentes, C., Issac, J., Wuethrich, M., Schaal, S., Bohg, J.  
2017; 2 (2): 577–84
- **On the relevance of grasp metrics for predicting grasp success**  
Rubert, C., Kappler, D., Morales, A., Schaal, S., Bohg, J., Bicchi, A., Okamura, A.  
IEEE.2017: 265–72
  - **Automatic LQR Tuning Based on Gaussian Process Global Optimization**  
Marco, A., Hennig, P., Bohg, J., Schaal, S., Trimpe, S., Okamura, A., Menciassi, A., Ude, A., Burschka, D., Lee, D., Arrichiello, F., Liu, H., Moon, et al  
IEEE.2016: 270–77
  - **Big Data on Robotics.** *Big data*  
Bohg, J., Ciocarlie, M., Civera, J., Kavraki, L. E.  
2016; 4 (4): 195–96
  - **Optimizing for what matters: The Top Grasp Hypothesis**  
Kappler, D., Schaal, S., Bohg, J., Okamura, A., Menciassi, A., Ude, A., Burschka, D., Lee, D., Arrichiello, F., Liu, H., Moon, H., Neira, J., Sycara, et al  
IEEE.2016: 2167–74
  - **Exemplar-based Prediction of Global Object Shape from Local Shape Similarity**  
Bohg, J., Kappler, D., Schaal, S., Okamura, A., Menciassi, A., Ude, A., Burschka, D., Lee, D., Arrichiello, F., Liu, H., Moon, H., Neira, J., Sycara, et al  
IEEE.2016: 3398–3405
  - **Learning Where to Search Using Visual Attention**  
Kloss, A., Kappler, D., Lensch, H. A., Butz, M. V., Schaal, S., Bohg, J., IEEE  
IEEE.2016: 5238–45
  - **Robust Gaussian Filtering using a Pseudo Measurement**  
Wuethrich, M., Cifuentes, C., Trimpe, S., Meier, F., Bohg, J., Issac, J., Schaal, S., IEEE  
IEEE.2016: 3606–13
  - **Robot Arm Pose Estimation by Pixel-wise Regression of Joint Angles**  
Widmaier, F., Kappler, D., Schaal, S., Bohg, J., Okamura, A., Menciassi, A., Ude, A., Burschka, D., Lee, D., Arrichiello, F., Liu, H., Moon, H., Neira, et al  
IEEE.2016: 616–23
  - **Depth-Based Object Tracking Using a Robust Gaussian Filter**  
Issac, J., Wuethrich, M., Cifuentes, C., Bohg, J., Trimpe, S., Schaal, S., Okamura, A., Menciassi, A., Ude, A., Burschka, D., Lee, D., Arrichiello, F., Liu, et al  
IEEE.2016: 608–15
  - **Leveraging Big Data for Grasp Planning**  
Kappler, D., Bohg, J., Schaal, S., IEEE  
IEEE COMPUTER SOC.2015: 4304–11
  - **The Coordinate Particle Filter - A novel Particle Filter for High Dimensional Systems**  
Wuethrich, M., Bohg, J., Kappler, D., Pfreundt, C., Schaal, S., IEEE  
IEEE COMPUTER SOC.2015: 2454–61
  - **Data-Driven Grasp Synthesis-A Survey** *IEEE TRANSACTIONS ON ROBOTICS*  
Bohg, J., Morales, A., Asfour, T., Kragic, D.  
2014; 30 (2): 289–309
  - **Three-dimensional object reconstruction of symmetric objects by fusing visual and tactile sensing** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*  
Ilonen, J., Bohg, J., Kyrki, V.  
2014; 33 (2): 321–41
  - **Robot Arm Pose Estimation through Pixel-Wise Part Classification**  
Bohg, J., Romero, J., Herzog, A., Schaal, S., IEEE  
IEEE.2014: 3143–50
  - **Dual Execution of Optimized Contact Interaction Trajectories**  
Toussaint, M., Ratliff, N., Bohg, J., Righetti, L., Englert, P., Schaal, S., IEEE
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IEEE.2014: 47–54

- **Fusing Visual and Tactile Sensing for 3-D Object Reconstruction While Grasping**

Ilonen, J., Bohg, J., Kyrki, V., IEEE

IEEE.2013: 3547–54

- **Probabilistic Object Tracking using a Range Camera**

Wuethrich, M., Pastor, P., Kalakrishnan, M., Bohg, J., Schaal, S., Amato, N.

IEEE.2013: 3195–3202

- **Visual servoing on unknown objects** *MECHATRONICS*

Gratal, X., Romero, J., Bohg, J., Kragic, D.

2012; 22 (4): 423–35

- **Mind the Gap - Robotic Grasping under Incomplete Observation** *IEEE International Conference on Robotics and Automation*

Bohg, J., Johnson-Roberson, M., Leon, B., Felip, J., Gratal, X., Bergstrom, N., Kragic, D., Morales, A.

2011

- **Enhanced Visual Scene Understanding through Human-Robot Dialog**

Johnson-Roberson, M., Bohg, J., Skantze, G., Gustafson, J., Carlson, R., Rasolzadeh, B., Kragic, D., IEEE

IEEE.2011: 3342–48

- **Learning grasping points with shape context** *ROBOTICS AND AUTONOMOUS SYSTEMS*

Bohg, J., Kragic, D.

2010; 58 (4): 362–77

- **OpenGRASP: A Toolkit for Robot Grasping Simulation**

Leon, B., Ulbrich, S., Diankov, R., Puche, G., Przybylski, M., Morales, A., Asfour, T., Moio, S., Bohg, J., Kuffner, J., Dillmann, R., Ando, N., Balakirsky, et al

SPRINGER-VERLAG BERLIN.2010: 109–20

- **Strategies for Multi-Modal Scene Exploration**

Bohg, J., Johnson-Roberson, M., Bjorkman, M., Kragic, D., IEEE

IEEE.2010: 4509–15

- **Attention-based Active 3D Point Cloud Segmentation**

Johnson-Roberson, M., Bohg, J., Bjorkman, M., Kragic, D., IEEE

IEEE.2010: 1165–70

- **TOWARDS GRASP-ORIENTED VISUAL PERCEPTION FOR HUMANOID ROBOTS**

Bohg, J., Barck-Holst, C., Huebner, K., Ralph, M., Rasolzadeh, B., Song, D., Kragic, D.

WORLD SCIENTIFIC PUBL CO PTE LTD.2009: 387–434

- **Integration of Visual Cues for Robotic Grasping**

Bergstrom, N., Bohg, J., Kragic, D., Fritz, M., Schiele, B., Piater, J. H.

SPRINGER-VERLAG BERLIN.2009: 245–54