

# William Vega-Brown

Computer Science and Artificial Intelligence Laboratory  
Massachusetts Institute of Technology  
32 Vassar Street, 32-33x  
Cambridge, M.A. 02139

Phone: 856-889-5139  
email: [wrvb@mit.edu](mailto:wrvb@mit.edu)  
URL: <https://people.csail.mit.edu/wrvb>

## Current position

*Doctoral candidate*, Department of Mechanical Engineering, Massachusetts Institute of Technology

## Areas of specialization

Artificial intelligence • Machine learning • Motion planning

## Appointments held

2011-2017    Doctoral candidate, MIT

## Education

2011    SB in Mechanical Engineering and Physics, MIT  
2013    SM in Mechanical Engineering, MIT  
2018    PHD in Mechanical Engineering, MIT (projected)

---

## Publications & talks

### PEER-REVIEWED PUBLICATIONS

- 2013    William Vega-Brown, Abraham Bachrach, Adam Bry, Jonathan Kelly, and Nicholas Roy, “CELLO: A Fast Algorithm for Covariance Estimation,” in the proceedings of the *IEEE International Conference on Robotics and Automation*, 2013.
- William Vega-Brown and Nicholas Roy, “CELLO-EM: Adaptive Sensor Models without Ground Truth,” in the proceedings of the *IEEE International Conference on Intelligent Robotics and Systems*, 2013.
- 2014    William Vega-Brown, Marek Doniec, and Nicholas Roy, “Nonparametric Bayesian Inference on Multivariate Exponential Families,” in the proceedings of the *Conference on Neural Information Processing Systems*, 2014.

- 2015 Charles Richter, William Vega-Brown, and Nicholas Roy, “Bayesian learning for safe high-speed navigation in unknown environments,” in the proceedings of the *International Symposium on Robotics Research*, 2015.
- 2016 William Vega-Brown and Nicholas Roy, “Asymptotically optimal planning under piecewise-analytic constraints,” in the proceedings of the *Workshop on the Algorithmic Foundations of Robotics*, 2016.
- Valentin Peretroukhin, William Vega-Brown, Nicholas Roy, and Jonathan Kelly, “PROBE-GK: Predictive Robust Estimation using Generalized Kernels,” in the proceedings of the *IEEE International Conference on Robotics and Automation*, 2016.
- 2018 William Vega-Brown and Nicholas Roy. “Admissible abstractions for near-optimal task and motion planning,” in the proceedings of the *International Joint Conference on Artificial Intelligence*, 2018.
- Vasileios Vasilopoulos, T. Turner Topping, William Vega-Brown, Nicholas Roy, and Daniel Koditschek, “Sensor-based reactive execution of symbolic rearrangement plans by a legged mobile manipulator,” in the proceedings of the *IEEE International Conference on Intelligent Robots and Systems*, 2018.
- Vasileios Vasilopoulos, William Vega-Brown, Omur Arslan, Nicholas Roy, and Daniel Koditschek, “Sensor-based reactive symbolic planning in partially known environments,” in the proceedings of the *IEEE International Conference on Robotics and Automation*, 2018.
- Charlie Guan, William Vega-Brown, and Nicholas Roy, “Efficient planning for near-optimal compliant manipulation leveraging environmental contact,” in the proceedings of the *IEEE International Conference on Robotics and Automation*, 2018.
- Katherine Liu, Kyel Ok, William Vega-Brown, and Nicholas Roy, “Deep inference for covariance estimation: Learning gaussian noise models for state estimation,” in the proceedings of the *IEEE International Conference on Robotics and Automation*, 2018.

#### BOOKS AND THESES

- 2013 William Vega-Brown, “Predictive Parameter Estimation for Bayesian Filtering,” SM Thesis, Massachusetts Institute of Technology, 2013.