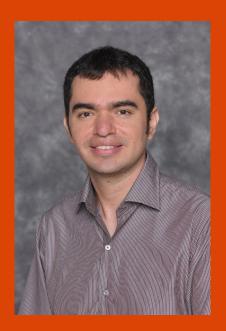# Solving Robotics Tasks in Sensing, Model, and Privacy Challenged Environments

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Several essential domains of robotics and autonomous vehicles, such as surveillance, planetary exploration, oceanic monitoring, automated construction, and search and rescue, require filtering and planning for robots in scenarios where communication, sensing, cooperation, and modeling are difficult.

In this talk, I will describe recent ongoing research efforts by my group and collaborators on solving robotic tasks in such scenarios. First, I will show some recent results on energy-efficient navigation in marine environments that work in environments with sensing and modeling uncertainty. Second, we present approaches to coordinate, perform task allocation, do multi-agent filtering, and create policies for robots while preserving privacy. Third, I discuss our current work in designing optimal human-robot interfaces in this challenging environments.

Dr. Leonardo Bobadilla is currently an Associate Professor at the Knight Foundation School of Computing and Information Sciences (KFSCIS), College of Engineering and Computing at Florida International University (FIU). He received his Ph.D. in Computer Science from the University of Illinois at Urbana-Champaign under professor Steven M. LaValle. He is interested in understanding the information requirements for solving fundamental robotics tasks such as navigation, patrolling, tracking, and motion safety. He has deployed test beds that can monitor and control many mobile units requiring minimal sensing, actuation, and computation. He has published over 60 peer-reviewed journal articles and conference papers in Robotics, Control, and Oceanic Engineering.

His research articles have appeared in prestigious journals such as IEEE Transactions of Automation Science and Engineering, IEEE Journal of Oceanic Engineering, IEEE Robotics and Automation Letters, ACM Transactions on Sensor Networks, and Journal of Intelligent and Robotic Systems, and in top conferences such as ICRA (IEEE International Conference on Robotics and Automation), IROS(IEEE/RSJ International Conference on Intelligent Robots and Systems), and RSS (The Robotics: Science and Systems). His research has been sponsored by the Army Research Office, Department of Homeland Security, DoD, NSF,ONR, DHS, FDEP and the Ware Foundation.

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