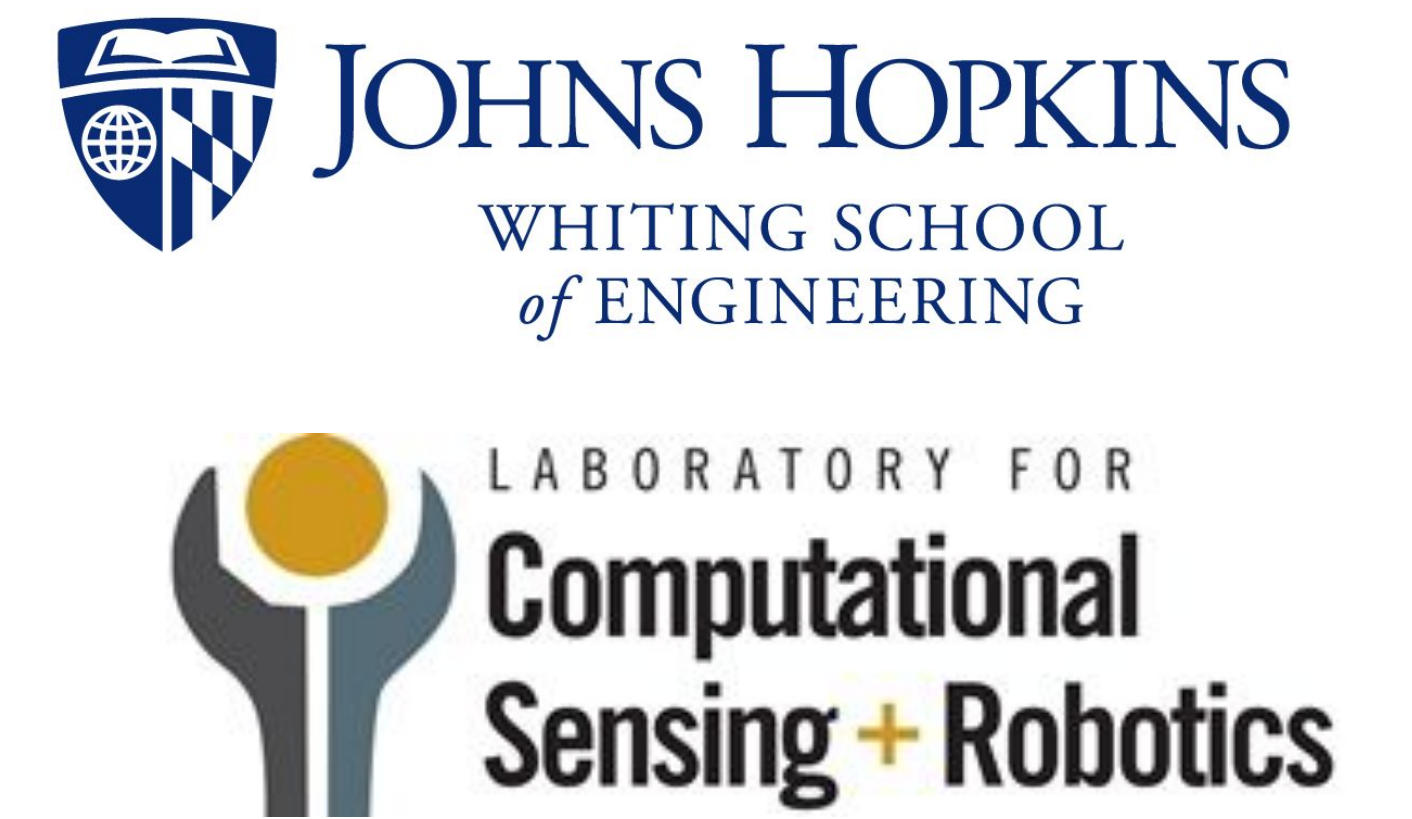


Unified Classical and Learned Control for Robust Aerial Manipulation

Marin Kobilarov, Johns Hopkins University (JHU): Laboratory for Computational Sensing and Robotics (LCSR)

marin@jhu.edu <http://asco.lcsr.jhu.edu>



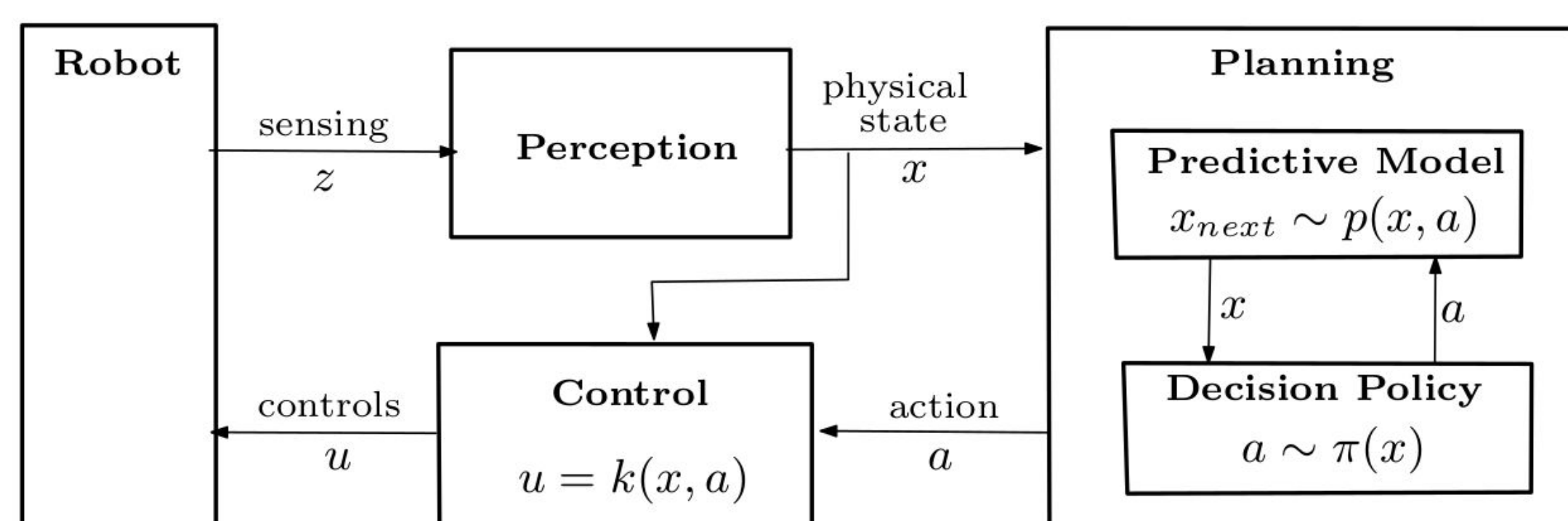
Challenges

- Improve robustness of agile robots operating in difficult conditions
- Applications to aerial grasping and aerial operations through contact

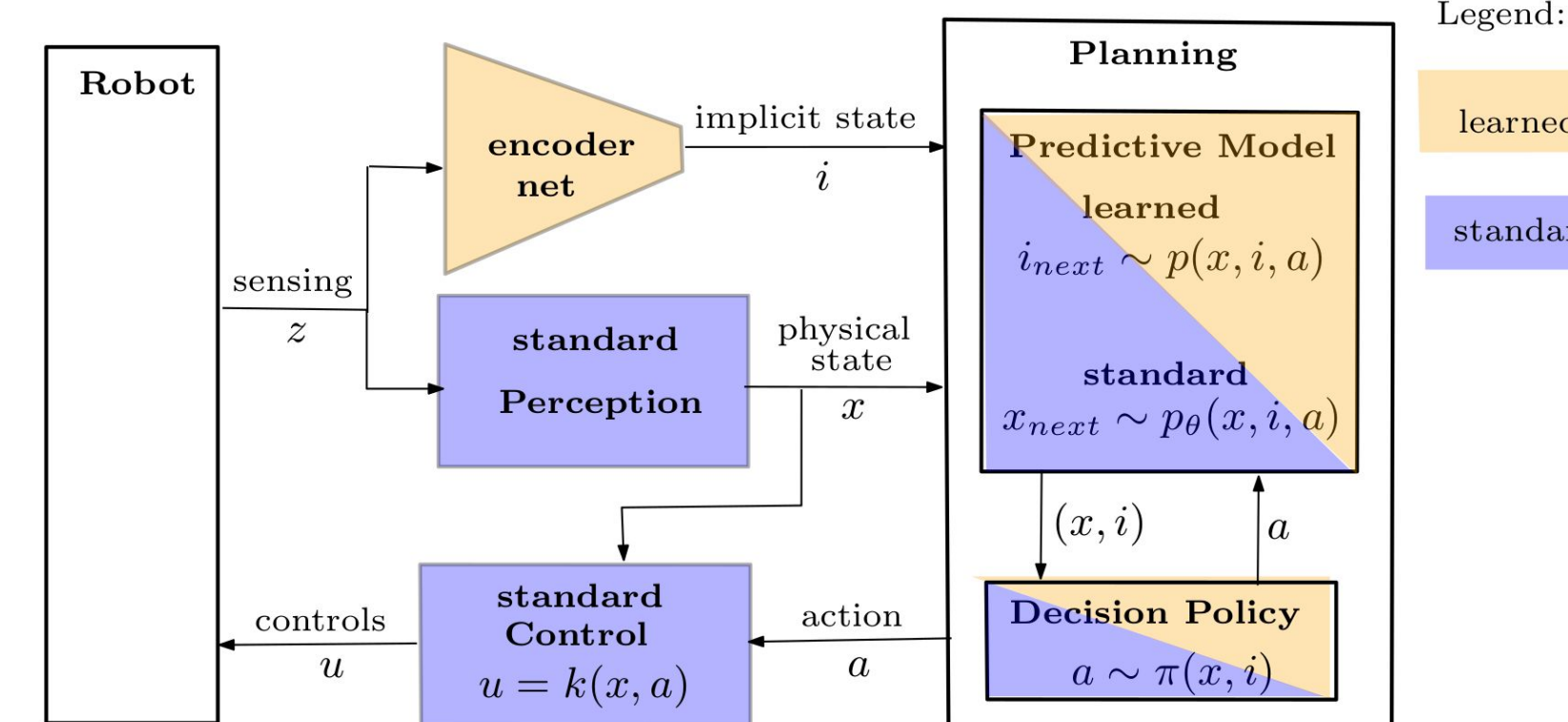
Scientific impact

- Develop autonomy architecture that combines standard and machine learned components
- Theory and methods applicable to general autonomous systems

Solution: combine standard and machine-learned components in a principled framework

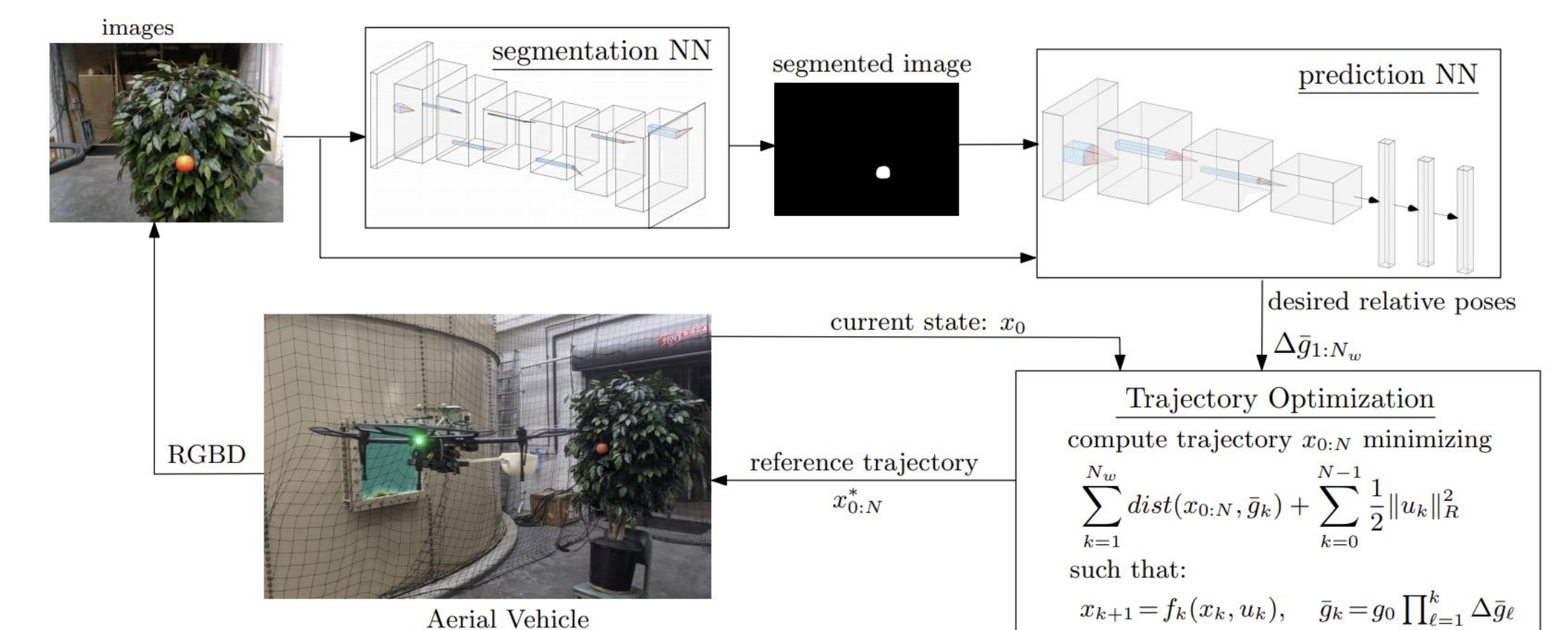


standard autonomy framework



unified autonomy framework

Legend:
 learned
 standard



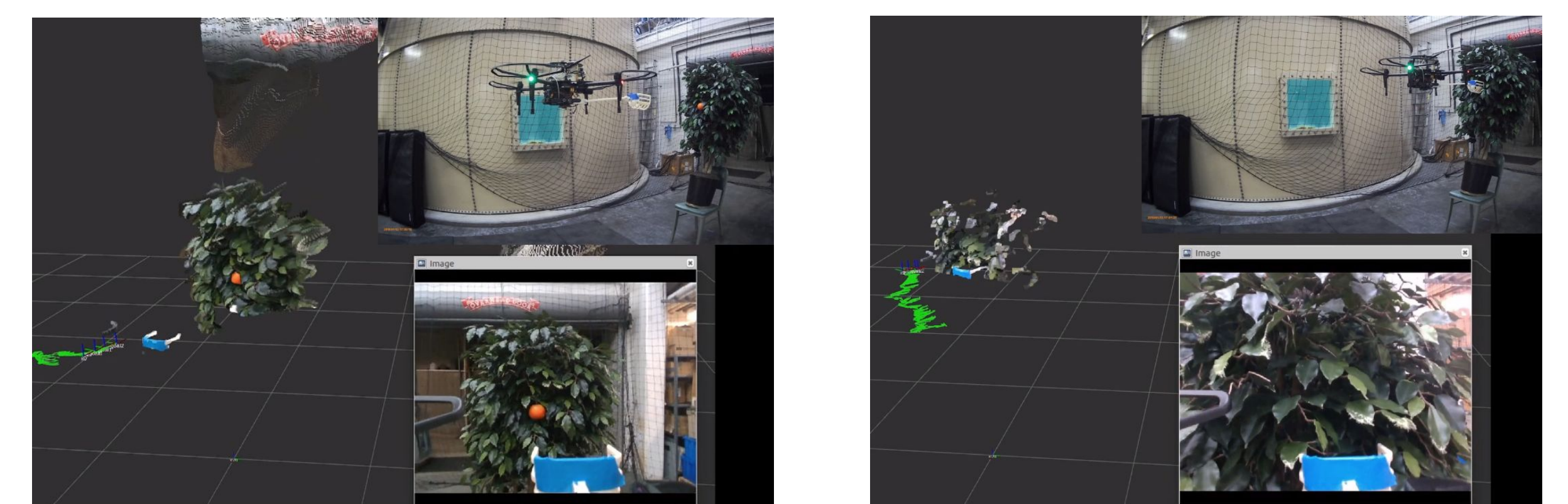
initial application to fruit picking

Broader impact: society

- warehouse logistics
- agriculture
- environmental sensing
- structural inspection

Broader impact: education

- plan to involve underrepresented groups
- platforms to be employed in undergraduate courses
- developed the AerialAutonomy package that is open-source and used by others



initial state before scoop

final state: fruit is inside scoop