

16.485: VNAV - Visual Navigation for Autonomous Vehicles

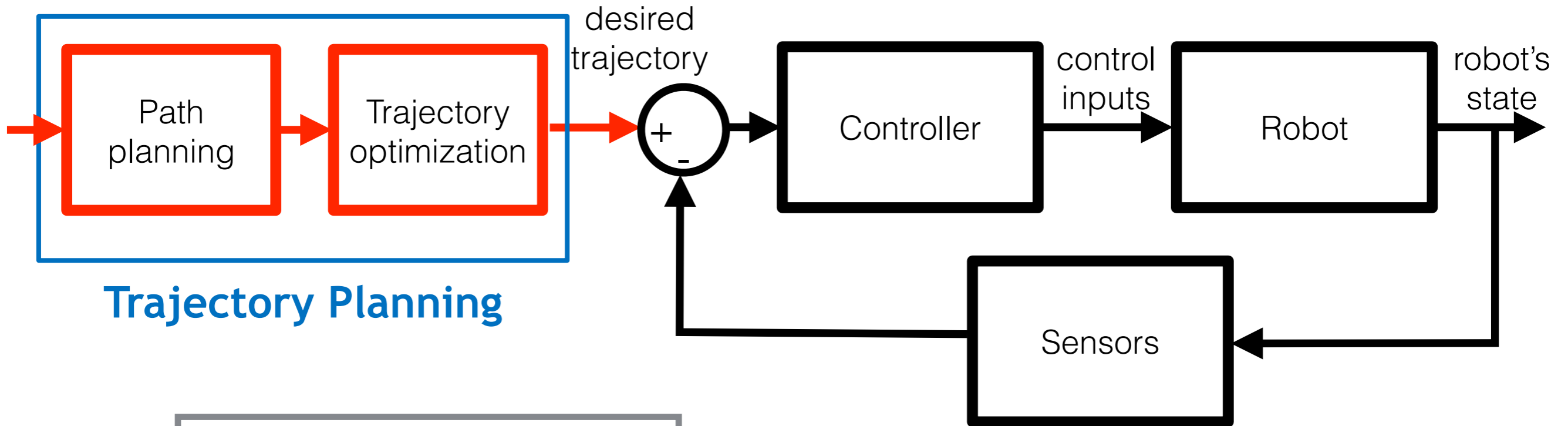
Lecture 9: Trajectory Optimization II

Luca Carlone

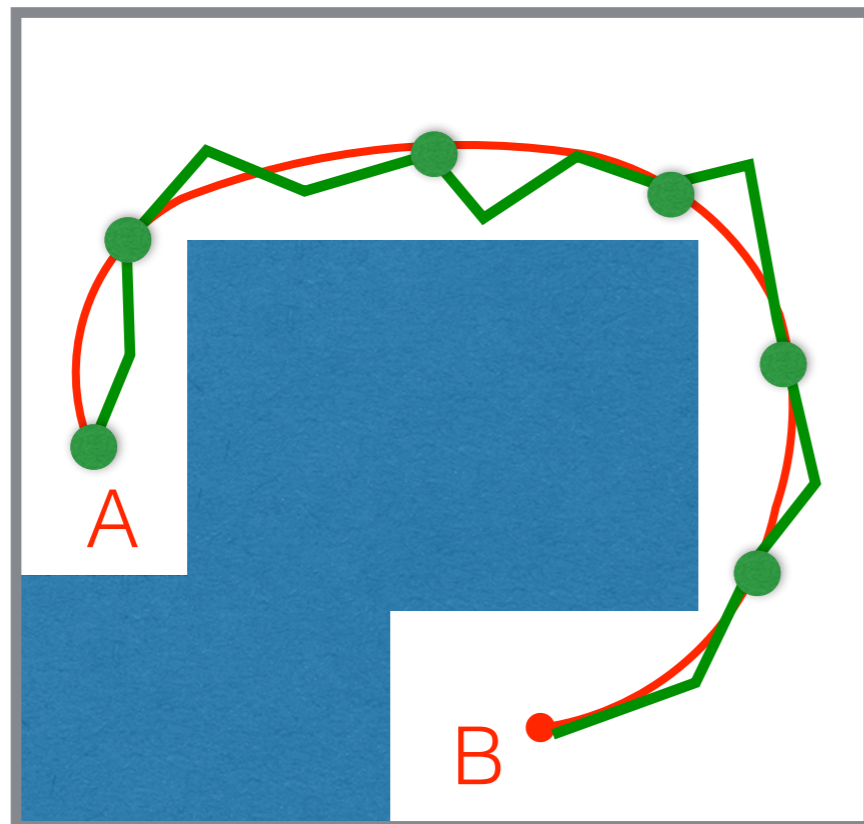


Decoupled Trajectory Planning

Intermediate waypoints



Trajectory Planning



Trajectory Optimization

video: 2013



Based on [A. Bry, C. Richter, A. Bachrach, and N. Roy. Aggressive flight of fixed-wing and quadrotor aircraft in dense indoor environments. IJRR, 37(7):969–1002, 2015]

Estimation, Control and Planning for Aggressive Flight with a Small Quadrotor with a Single Camera and IMU

Giuseppe Loianno
Vijay Kumar

Chris Brunner
Gary McGrath

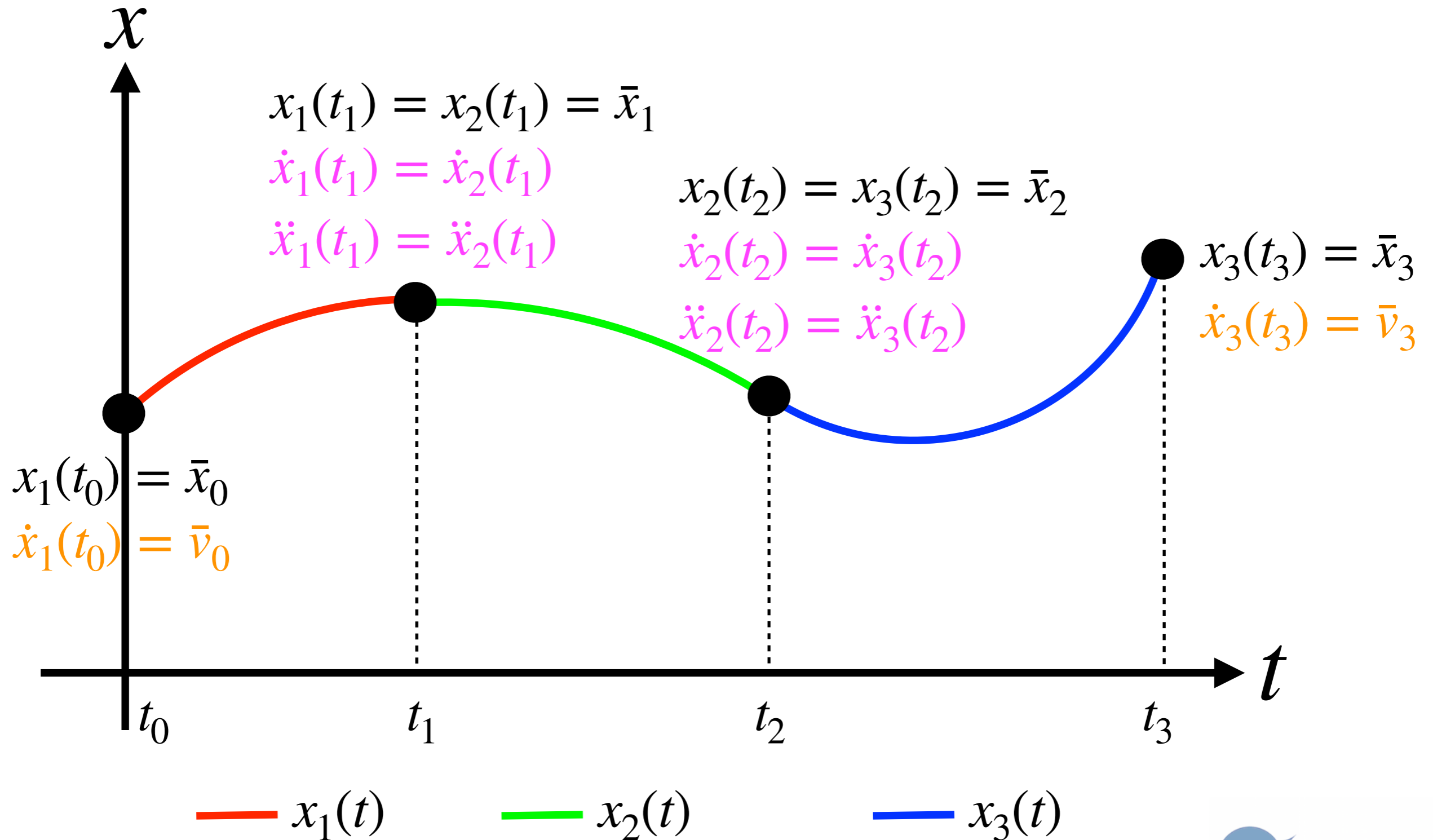


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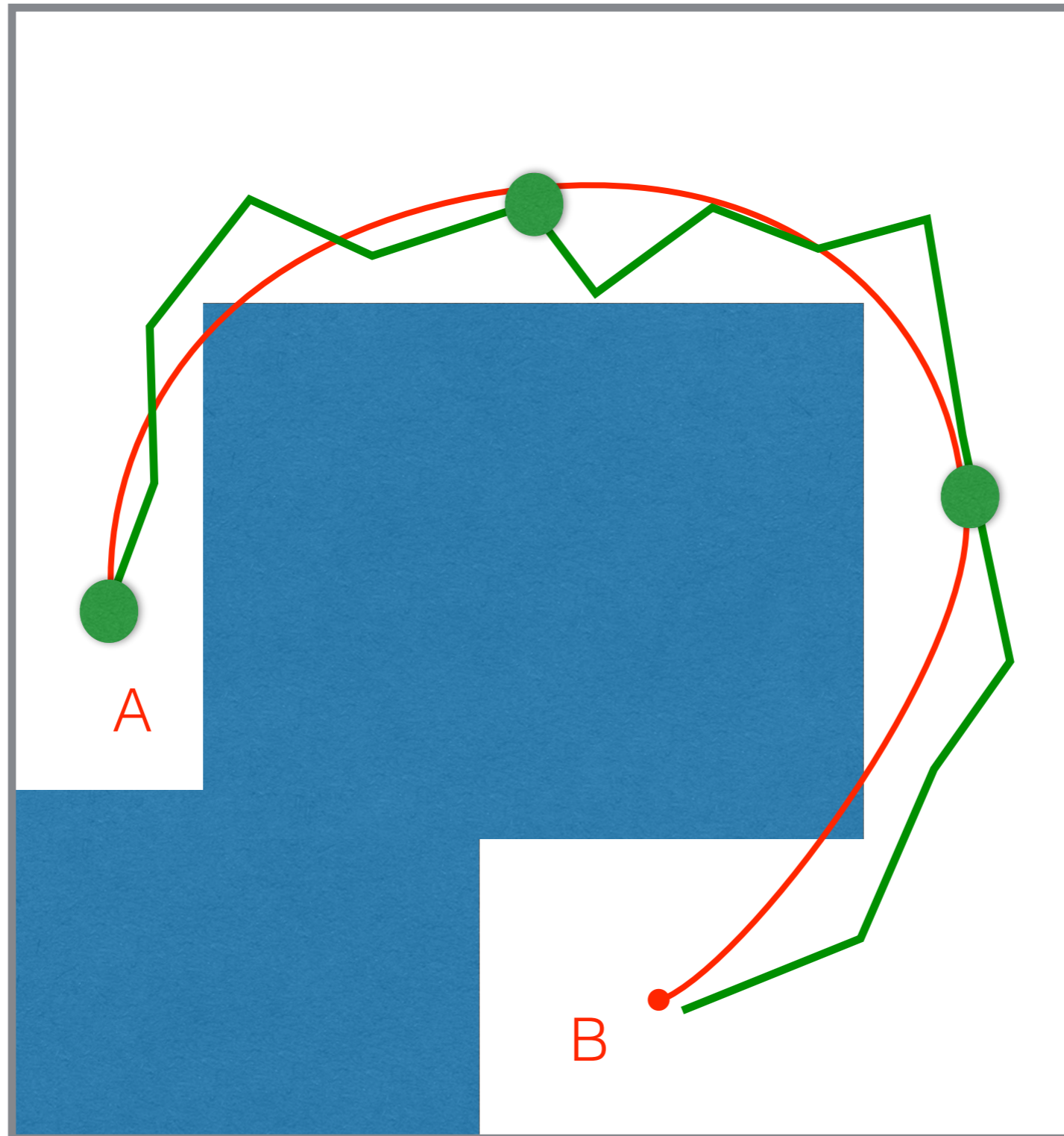
www.kumarrobotics.org

Based on [Daniel Mellinger and Vijay Kumar. Minimum snap trajectory generation and control for quadrotors. pages 2520–2525, ICRA, 2011]

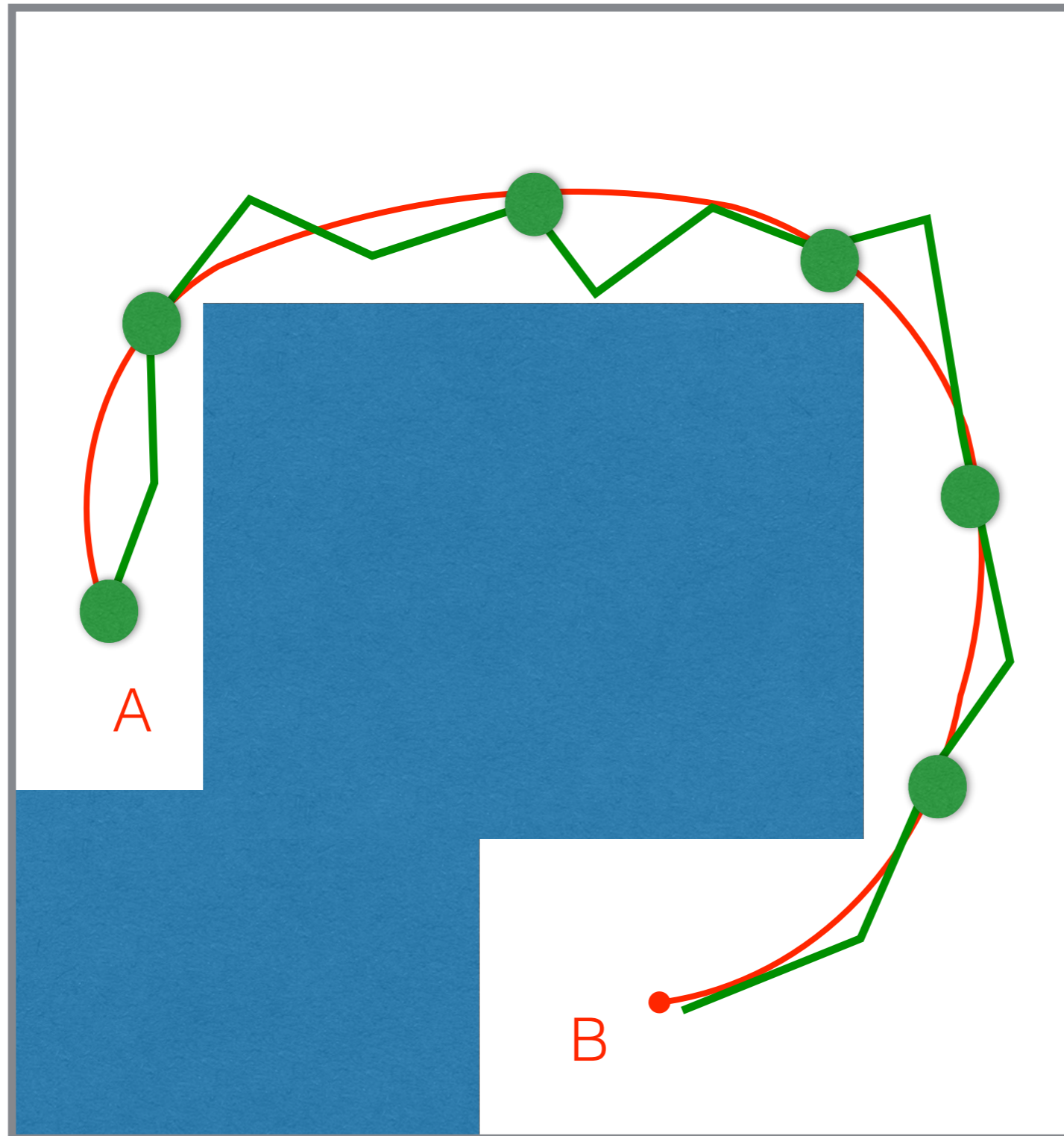
Trajectory Optimization



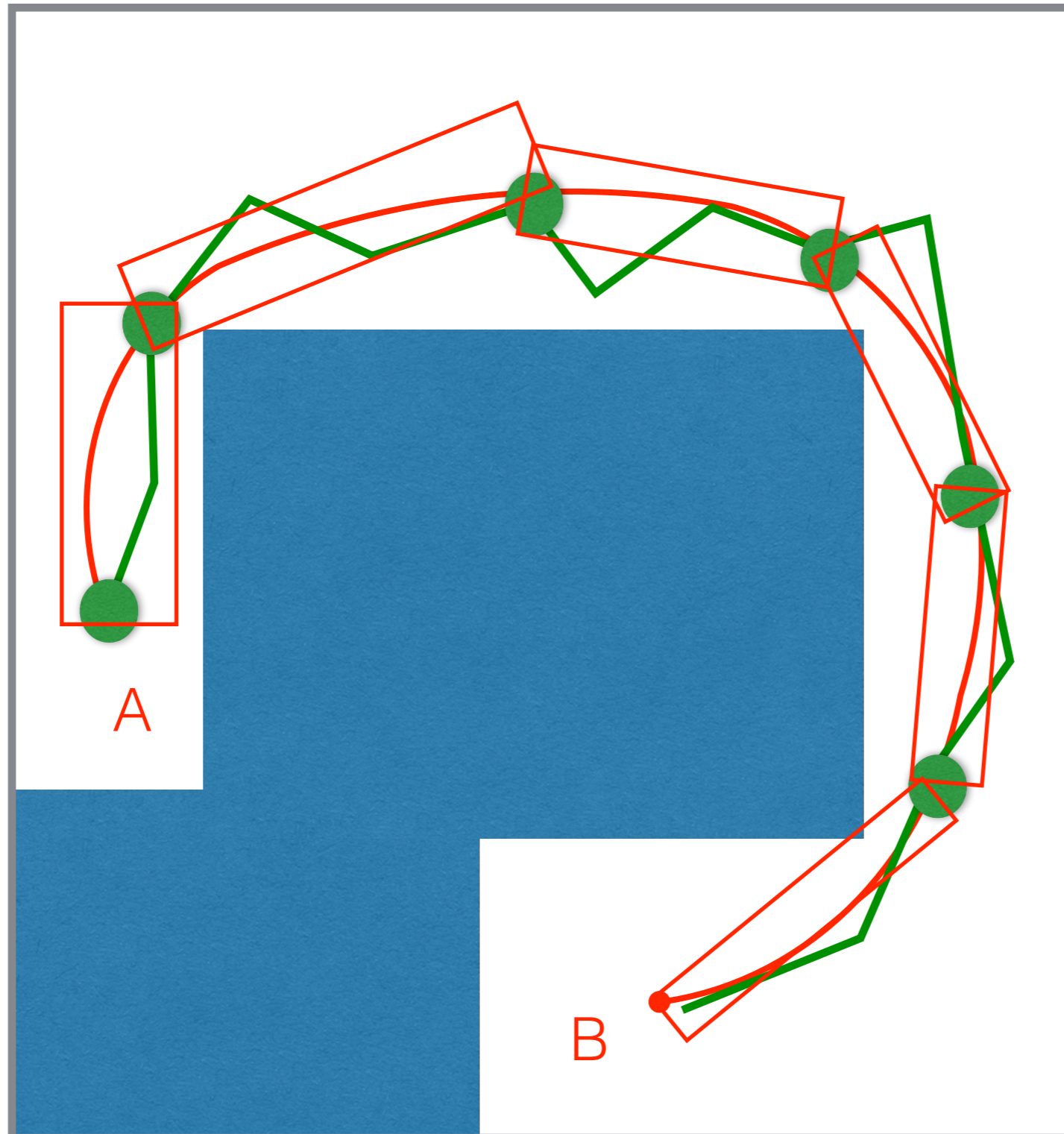
Collision Avoidance



Collision Avoidance



Collision Avoidance



Time Allocation

