

HW2 (Due Next Tuesday 12AM)

- Discuss the advantages and limits of different wheel drives (for differential drive, Ackerman Drive, Synchronous Drive, XR4000 drive, and Mecanum Drive, list their pros and cons in terms of cost, degree of mobility, degree of steerability, degree of maneuverability, workload capacity, motion control complexity)
- Simulate the kinematics of a robot with a differential drive (plot a motion trajectory, given the initial pose [position orientation] and goal pose [position orientation], by selecting feasible velocities and assuming a goal tolerance; discuss the effects of different selections of goals and velocities; provide codes and plots of simulation results)
- Simulate the motion control of a robot with a differential drive and show the resulting paths w.r.t. different control gains (Provide codes and plots of simulation results)

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- **Extra Credit on Next Page**

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- (Extra Credit for undergraduate students and required for graduate students) Simulate the odometry readings for a differential drive robot with the measurements of linear and angular accelerations with uncertainties and noise. (Provide codes and simulation results with different uncertainties)

