

# CSE 574: Class project

- Opportunistic Re-planning Agent  
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# Objectives

- Opportunistic – Agent should be able to take advantage of plan at hand for achieving new goals
- Conservative – Agent should not give up it's current goal in order to achieve a new one
- Minimize re-planning / making local changes to the plan

# Splitting goals into phases

- Breaking the goal into phases facilitates better merging of new goal into a plan
- Each phase can be accommodated into the plan at a point nearest to it (in terms of action costs)  
E.g. Delivering packages
- How to split the goal into phases?

# Domain dimensions

- Logistics domain
  - Dimension 1 – agent's location
  - Dimension 2 – package's state
- Actions move and pickup/drop transition the state in 2 dimensions
- Goal in this domain split into two phases: picking up, and delivering the package

# Goal epochs

- Agent's way of remembering important event along a plan trajectory (analogous to epoch in temporal planning)
- Plan trajectory is demarcated with event's relevant to each goal
- These act as points of re-entry into the plan after digressing to achieve a new goal (rather, a phase of it)

# Approach

- Mark original plan trajectory with event (epochs) for the current goal set
- Split any newly assigned goal  $g'$  into phases
- Use the planner for digressing and reentering the original plan for each phase
  - Abandon the goal, if cost incurred in any of the phases outweighs the goal utility, or if it invalidates any part of the original plan

# Interesting questions...

- How to split the goals into right phases in a domain-independent way?
- How beneficial/difficult would it be to generate this epoch information during planning, as opposed to by post-processing the plan?
- How to do the same for durative actions and deadline goals?