

Example Problem Descriptions

The following are two example problem descriptions that satisfy the five criteria:

- 1) Clear and concise single paragraph
- 2) All key terms defined
- 3) Well defined measurable goals
- 4) Proper grammar and spelling
- 5) Does not include a research plan

Randy Asaki is an independent videographer working in editing green screen movie scenes. A green screen is a uniform green backdrop that is replaced in a final movie edit with a desired background video. Good editing requires that the green screen be identified, at the pixel level, in every frame. However, current, sufficiently accurate, methods rely on time consuming intervention by the videographer. Our task is to create processes that improve upon current methods without losing accuracy. An improvement is any technique that allows the videographer to rely on automation, thus reducing instances of needed intervention. Specific improvements that we have been requested to make are recognizing green screen reflections which obscure the foreground objects and significantly decreasing the number of frames requiring user intervention.

Pullman transit operates several bus routes on a fixed budget. Primary ridership comes from local students. There are fixed routes and fixed schedules. At certain times on certain days, buses reach their capacity before a bus has completed its loop, leaving riders waiting for a next bus. We are tasked with adjusting the schedule and/or routes to optimize rider satisfaction. As a proxy for rider satisfaction, we will minimize wait times, discomfort due to overcrowding, and inconvenience based on bus stop location. One very likely constraint is that we are limited to the current fleet of buses.