

Long Descriptions for Hourglass Communication Poster

Figure 1:

A standard hourglass shape with rows describing parts of a technical communication. The top three rows have a purple background and the bottom three rows have a pink background. The top row is wide and says, "Establish significance: A problem your audience cares about." The second row is slightly narrower and says, "Describe the status quo: What we currently know/do..." The third row is narrower still and says, "Identify a gap: We need to know/do..." The fourth row is the narrowest and says, "What did you do? In order to know/do..." The fifth row is wider and says, "Fill the gap: You found (or could find)... We now (or could) know/do..." The bottom row is the same width as the top row and says, "Re-establish significance. The problem is (or could be) improved."

Figure 2:

A wineglass-shaped hourglass with a very short stem with rows describing parts of a technical communication and examples. The top four rows have a purple background and the bottom three rows have a yellow background. The top row is the widest and says, "Establish big picture: Craters on asteroids can give evidence from billions of years ago on how the solar system formed." The second row is slightly narrower and says, "Establish significance: Due to their incredible speeds and distant locations, asteroids will require autonomous systems for approach and landing." The third row is slightly narrower and says, "Describe the status quo: Current control techniques require an accurate model of the environment to control the spacecraft." The fourth row is narrower still and says, "Identify a gap: Reinforcement learning (RL) has shown promise for this application due to its ability to learn control policies for a wide array of scenarios. The fifth row is the narrowest and is the stem of the glass. It says, "What did I do: We apply reinforcement learning to the asteroid landing problem." The sixth row is much wider and says, "Fill the gap: We found that RL is able to create more robust control policies than current methods." The bottom row is almost as wide as the top row and says, "Establish significance: Through our work, we have demonstrated the first RL algorithm for fully autonomous asteroid landing."

Figure 3:

A goblet-shaped hour glass with a very wide top and bottom and a long medium with stem with rows describing parts of a technical communication with examples. The first two rows have a purple background and the bottom three rows have a yellow background. The top row is the widest and says, "Establish significance: Due to their incredible speeds and distant locations, asteroids will require autonomous systems for approach and landing. The second row is slightly narrower and says, "Identify a gap: While model free RL allows us to develop control strategies for systems that are too complicated to model, their results are not guaranteed to follow basic laws of physics. The third row is narrower and says, "What did I do: We apply a standard actor-critic reinforcement learning in conjunction with a physics informed neural network to constrain the control strategies of our work. We use mean pooling and multi-head attention to prioritize strategies that maintain safety throughout. The fourth row is about the same width and says, "Fill the gap: We found that our technique is able to create more robust control policies than other model free RL methods. The bottom row is slightly wider than the top row and says, "Establish significance: Through our work, we have demonstrated the first RL algorithm for fully autonomous asteroid landing."