

# AI & Robotics: Research

## Exercise 9

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### 1 Read the GVF paper

Find the paper here:

– <https://sites.google.com/view/gvf-tool>

The paper from RSS 2019 is a great example for developments in the area of Deep RL that move from fully model-free to model-based RL approaches. Here, the learned model is purely visual (“visual foresight”).

For each of the following items, be able to give a brief report (ca. 4mins each):

- a) List and explain what the authors claim the contributions are, i.e., what precisely is beyond previous work in this paper
- b) Summarize the different areas of related work. Briefly lookup at least one paper from each of the four paragraphs of section II. “Lookup” means: Find the paper and read the abstract.
- c) “Visual MPC” is a core underlying methodology. Be able to explain what this means.
- d) Be able to explain Figure 2 left, together with the data collection methods described in section IV-A
- e) Be able to explain Figure 2 right, together with execution approach described in section IV-B
- f) What is the “action proposal model”: What is its network architecture, and how is it trained? Be able to explain Figure 5 of the paper.
- g) What is the “predictive model”? See IV-A-4)
- h) At time time, how does the user specify the task/goal, and how does this define the costs used for planning?
- i) Planning is described only very briefly in IV-B-2) Try to explain this as best as possible.
- j) What are the experimental setups?
- k) What baselines do they compare their method with?
- l) Be able to talk through experiments shown in the accompanying video