AI & Robotics Seminar
Reading Assignments

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1 Some more details on the Reading Assignments

Here some information on the reading assignments and typical paper structure, giving more details to the outline found in the overview slides (slide 4/8).

In the reading sessions we will go through the paper together. Each student will contribute to explaining the different aspects of the paper in a round robin fashion. Your reading assignment is to read the paper in detail and thereby prepare to being able to give a brief report (ca. 4mins) to each of the paper's aspects. When reporting in the reading session, you can share your screen or notes or the annotated pdf.

The aspects we discuss follow the typical structure of a paper in the field:

Introduction In the Introduction, authors need to first motivate the area of research as a whole (typically the first 1/2 of the introduction). Then they typically "claim their contributions", i.e., they make explicit in what ways this paper contributes beyond previous work. This list of contributions is a strong hint to the reviewer: the authors state what the reviewer should look out for.

Both of these aspects (motivation & contributions) should be identified in the reading session.

Related Work The second section is typically about related work and has paragraphs or subsections for groups of papers on a topic related to the own contributions. Each subsection cursorily discusses the work in this sub-area and then concludes by how *this* paper is beyond and better than the previous works. These concluding sentences are highly interesting and again a strong hint to the reviewer to convince about the novelty of this work.

For each of the sub-areas of related work you should be able to roughly explain them, and identify the core points where the current work goes beyond.

Also, it sometimes becomes clear which are the main competitors to which the author should also compare themselves experimentally – identify these "baselines".

Background Some papers (the minority) have an additional background section, which introduces notation or basic formalism which is not novel and on which the next sections build. (E.g., repeat the standard definition of an MPD.)

Novel Methods The core of the paper are the sections on novel methods. You should try to be able to explain methods, each figure, and each equation in detail. If the work builds heavily on previous work, lookup the most important background from this previous work.

Experiments Most AI papers have an experimental section, evaluating the novel methods against previous methods. The section should be precise about the experimental settings (details of settings, what simplifying assumptions are made, which data is used, which network achitecture is used, the number of trials, episodes, objects, or any other kinds of parameters), as well as which competitors (baseline methods) are compared to. As reader one should always check if the comparison is fair, whether the claims made in the introduction match the evaluations, and whether the evaluation is statistically sound.

Supplementary Video A video is often accompanying the experimental evaluations. Some videos are mainly educational (trying to shortcut reading the paper), others provide useful experimental data. E.g., does the show trials for all the experimental setups defined in the paper, a wide variety of behaviors, failures, adding to the numerical results mentioned in the paper?

Conclusion The conclusion section sometimes is merely summarizing the claims and evaluations again, sometimes also adding insights, discussion of limitations, or an outlook.