

## 6 Online and Flexible Planning Algorithms

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In this chapter, we present planners and approaches to inverted planning and intent recognition. To do that we must first have **a** efficient online planning algorithm that can take into account observed plans or fluents and find the most likely plan to be pursued by an external agent. The planning process must be done in real time and take into account new observations to make new predictions. This requires the use of online planners. In such cases, the planning process works using distinct phases. In figure 6.1, we **illustrate the components of the process**. Only the planning part is meant to have real-time constraints on its execution the rest is usually a linear process and can be negligible in terms of execution times.

détailler chaque bloc, pourquoi pas en faisant le lien avec tes chapitres précédents



Figure 6.1: Planning phases for online planning

Classical planning can be used for such a work but lacks flexibility when needing to replan at high frequency. The planner must be either able to reuse previously found plans or be able to compute quickly plans that are good approximation of the intended goal. **We could use probabilistic planning, especially Partially Observable Markovian Decision Process (POMDP) to directly encode the intent recognition problem but that approach has been explored in great detail already,** including numerous Bayesian network approaches. Further discussions of inverted planning and intent recognition can be found **LATER**.

We propose

**It was decided to** explore more expressive and flexible approaches to use the semantics of the planning domain to attempt to guide the search to **a more logical plan**. **This approach** uses either repair heuristics or explanation to provide fast predictions of intended goals.

**TOUJOURS PAREIL: IL MANQUE LE PLAN !!!!!**

### 6.1 Existing Algorithms

titre trop flou: Existing plan repair methods ?/ Existing methods for plan reparation ?

In order to make a planner capable of repairing plans, the most fitting paradigm is PSP as described **BEFORE**. Using the plan space for search allows to modify the refinement process into repairing existing plans.

toujours pareil: tu dois mieux te positionner vs ces approches (inconvenients vs planif classique ?), juste dire que ça a été déjà beaucoup étudié n'est pas une raison valable pour ne pas l'utiliser !

laquelle ? celle que tu proposes ? celle de l'état de l'art ?

plus logique que quelles approches ?