

# POPULAR SCIENCE ABSTRACT

In the field of problem-solving, there are traditional methods that have shown impressive performance in tackling complex tasks. However, these methods can be slow and less efficient when it comes to tasks that require looking far ahead into the future. To overcome this challenge, we developed a new search algorithm called Subgoal Search.

Subgoal Search works differently from traditional methods. Instead of taking small steps to solve a problem, it focuses on identifying important intermediate goals, which can be achieved in a few moves. By using these subgoals, the search process becomes faster, especially for problems that involve hundreds or even thousands of steps. This is important because difficult problems often have a lot of steps to solve.

The Subgoal Search algorithm has already gained recognition in top scientific conferences, where it was considered one of the top publications. However, there are some limitations to its current version. It cannot be used in situations where there are many things to observe, such as in tasks that involve visual sensors. Additionally, it requires having a perfect model of the problem environment, which is often difficult to obtain in real-world applications.

In this project, our goal is to overcome these limitations and make Subgoal Search usable in a wide range of real-world situations. We aim to do this by learning meaningful representations of the problem environment. These representations help us simplify the information we need to consider, making it easier to generate subgoals. They also help us create a reliable model of the environment, which is crucial for effective problem-solving.

When we succeed in achieving these goals, the enhanced version of the algorithm, called Advanced Subgoal Search, will be applicable to almost any environment, which would be a significant contribution to the field of planning.