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# From Satisficing to Optimization in Reinforcement Learning

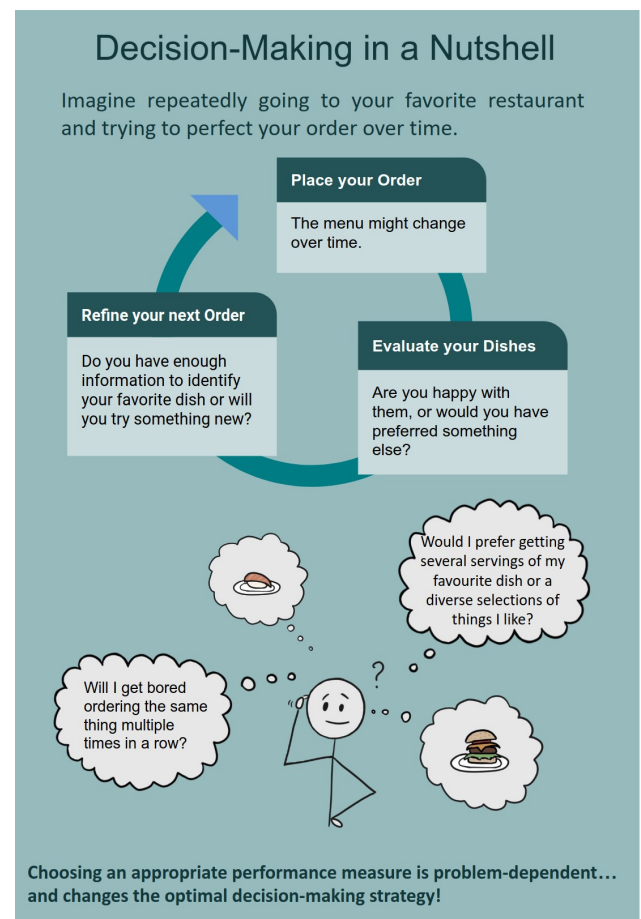
Reinforcement learning is the science of sequential decision-making, used to learn complex behaviours in fields such as robotics and autonomous driving. The standard approach develops algorithms that converge to optimal behaviour, but optimising algorithms may still select poor actions for arbitrarily long periods, even late in training.

**In this project, we develop algorithms that achieve reliable performance in the short term without sacrificing long-run optimality.**

**Satisficing as a performance objective:** In many settings, achieving a reward above a given threshold is sufficient, and more robust than chasing the optimal. This notion, known as satisficing, arises naturally in everyday decision-making and has been studied extensively in optimisation. Translating it to sequential learning, however, introduces fundamental new challenges.

**A new notion of satisficing regret:** Prior work required every individual action to meet the satisficing threshold. Requiring instead that the agent's policy is satisficing *on average* is sufficient to guarantee reliable behaviour, while still permitting enough exploration to achieve near-optimal performance over time.

**The best of both worlds:** This weaker requirement resolves a fundamental tension in earlier approaches, where constant satisficing regret was shown to require arbitrarily bad classical regret. Our algorithms simultaneously achieve near-optimal satisficing regret and near-optimal classical regret.



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# Exploring Industry Through Interactive 3D Models

Interactive, Accessible, and Scalable Visualization

This project presents interactive 3D models of industrial environments, allowing complex technical systems to be explored in a clear and intuitive way. By using browser-based visualization, these models can be accessed without installation and make industrial spaces more understandable for students, engineers, and stakeholders.

Example of an interactive 3D model of an industrial environment.



## Method:

The 3D environment was created using **Unreal Engine** and implemented as an interactive experience accessible through a web browser. This allows users to explore the system in real time without requiring specialized software.

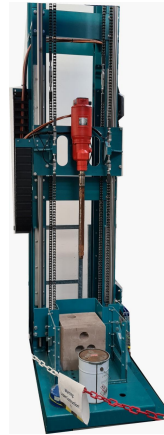
## Use Case

Interactive 3D models can be used to showcase laboratories, workshops, and industrial facilities in a clear and engaging way. They enable virtual tours for students, partners, and potential employees, and support communication of complex systems without requiring physical access to the environment.

## Example of real devices



## 3D rendered



## Potential & Future Applications

These models can be further extended to simulate real industrial processes and experiments, enabling users to test scenarios in a safe and controlled environment. Combined with technologies such as virtual reality, they offer immersive experiences and open new possibilities for training, education, and engineering analysis.



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**Focus:**  
3D design & interactive application

