NAO Planning Competition 2024

J&G Nao Crew

Jonathan Cerullo Uyi - Giovanni Ponzuoli

Choreography Requirements

- Our goal is to create a choreography for the NAO robot that meets specific criteria
- The choreography has to include some mandatory positions, ensuring adherence to predefined movements
- Additionally, we want to introduce creative freedom by incorporating alternative positions

Mandatory Positions

These positions are required to achieve the final goal
They can be executed in any order

Intermediate Positions

To make the choreography more engaging, we incorporate additional positions

Algorithm: Iterative deepening search

- ☐ We need to find a suitable path between the mandatory positions of the choreography

- ☐ The algorithm prioritizes solutions based on time remaining and possible moves to perform, looking for a smooth performance

1 **Time**

Perform the whole choreography in 2 minutes.

*Song: "Ferrari - James Hype"*

2 **Number of positions**

Execute all the 8 mandatory positions + at least 5 intermediate positions.

Enhancing final choreography

○ To further optimize the choreography, we avoid to repeat moves that have already been performed

○ After executing a position, we randomly shuffle the other possible moves

StandInit	**Mandatory Move**	**Mandatory Move**	**Crouch**
Initial position	[i]	[i+1]	Final position

Intermediate Moves
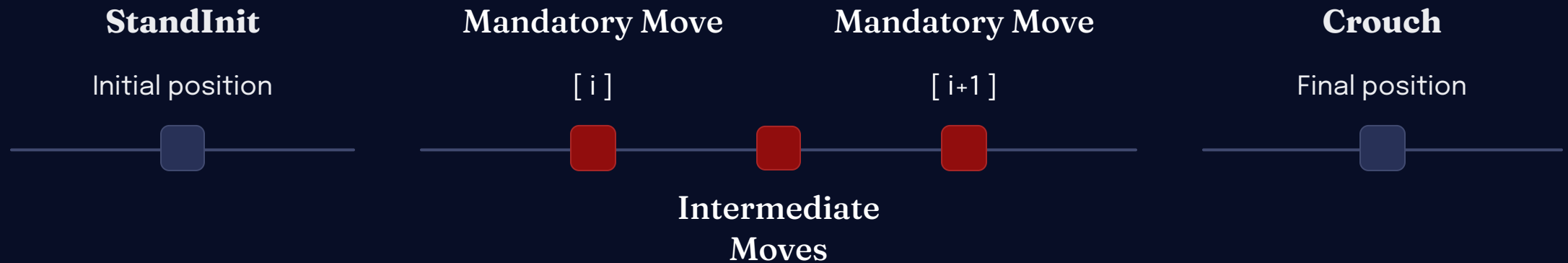
Conclusion: Towards More Dynamic Choreography

J&GNaoCrew_demo.mp4

Dynamic Choreography

This project displays the application of AI algorithms for choreographing the NAO robot. The use of iterative deepening search enable us to create a choreography that meets the requirements of mandatory and alternative positions within a specified time frame.

Thank you!