

## Real-Sim-Real Robot Control Framework

～Based on Internal Model Learning～

### 概要

This study aims to build a bridge between the real and the virtual world so that a robot can learn and behave smartly like a human. For this problem, we divide it into three subproblems; **motion retargeting**, **physics simulation**, and **transfer learning**. To handle these problems, we utilize the internal model in the process of our framework, so as to inherit the characteristics of the real animal for the robot control.

### 特徴

- **Motion retargeting** considers kinematical deviation between the human and the robot by matching their skeletal features.
- **Physics simulation** provides the reference motions while satisfying the physical constraints.
- **Transfer learning** provides a wide variety of robot controls based on the experiences, acquired from the physics simulation.

### 今後の展開

- As it is ongoing work, the overall framework is not established perfectly, yet. Especially in the case of the learning module, we plan to test learning model candidates that guarantee the performance of the final result.

### テーマ「Society5.0への貢献～サイバーとフィジカルの融合に向けて～」との関連

- This research can help free people from hazardous work. This is because robots can replace humans working in hazardous places through more stable and robust robot control, which is the goal of this research. In addition, robot behavior will become more natural and smart, making it more familiar and useful to humans.

