人と知能の融合

人の能力を引き出すテクノロジー

基礎研究

報道発表

Neuroergonomic Approach to Investigate Dynamic Whole-Body Movement: Toward Prediction and Enhancement of Human Performance

概要

Neuroergonmics investigates human brain function in real-world situations to develop technologies that enhance performance and well being. This research focuses on understanding the brain and biomechanical processes behind skateboarding maneuvers on a quarter-pipe ramp. By employing neuroergonomic techniques to record EEG brain activity, EMG muscle activity, foot forces, and full body motion capture, this research aims to identify neural correlates of performance. These insights, during both task execution and mental imagery, can be leveraged by neuromdulation techniques to enhance skill and performance.

特徴

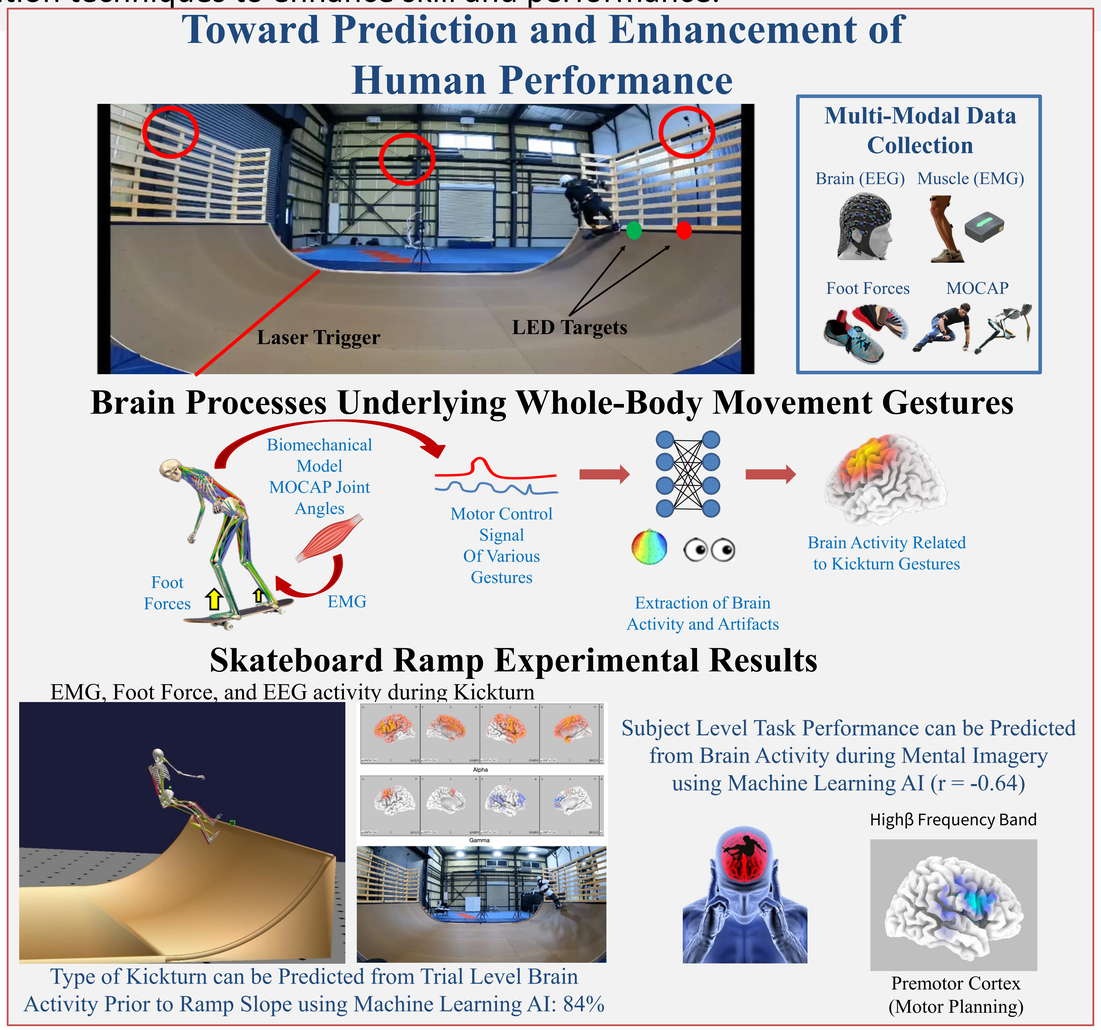
- This research utilizes synchronized acquisition and synthesis of multiple modalities including whole body motion capture, multi-channel foot force, EMG muscle activity, and EEG brain activity to investigate transitions and dynamics of gestural synergies.
- Skateboarding lends itself well to a neuroergonomic investigation of whole-body movement. Skateboarding is a dynamic task requiring transition and sequencing of multiple whole-body gestural synergies.
- Performance of various types of kickturns are evaluated on a precision targeting task. Neural correlates of performance during the task as well as subject level correlates of performance during mental imagery of the skateboarding task are investigated.

今後の展開

- The future objective is to utilize information regarding neural correlates of performance together with neuromodulation techniques (e.g. decoded neural feedback, transcranial brain stimulation tACS, FUS) to enhance task related skill.

テーマ「社会課題と向き合う科学技術の最前線」との関連

- This research has considerable implications for the development of neuroergonomic technology that can be applied beyond enhancing athletic performance to also include treatment for rehabilitation after injury as well as for skill learning in the ageing population.



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