

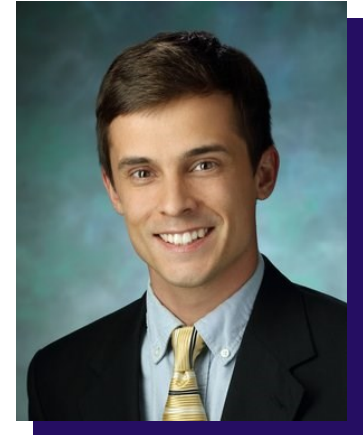
Applications of Computer Vision in Human Movement Assessment

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Ryan Roemmich is an Assistant Professor in the Center for Movement Studies at the Kennedy Krieger Institute and in the Department of Physical Medicine and Rehabilitation at the Johns Hopkins University School of Medicine. He is also the director of the Rehabilitation Precision Medicine Center of Excellence at Johns Hopkins Medicine. He is a human movement scientist whose research focuses on motor rehabilitation in persons with neurologic damage or disorders. His research combines principles from engineering, biomechanics, and neuroscience to understand how the nervous system controls movement and to develop new approaches to movement assessment and rehabilitation.

ABSTRACT

Identifying and understanding movement dysfunction is an important component of rehabilitation and the initiation of treatment. Current state-of-the-art approaches for movement analysis, such as marker-based motion capture systems and instrumented gait mats, are largely inaccessible due to prohibitive costs of time, money, and effort required to perform the assessments. Video-based movement analyses provide an easy and accessible method for assessing clinically relevant motor measures in the clinic and at home.

Here, I will discuss our recent work on using computer vision to perform movement assessments using simple digital videos. I will highlight work that demonstrates our approaches to videobased assessments of gait and upper extremity movements in persons with and without neurologic damage or disease. I will also provide some perspectives for getting optimal results when using these technologies and discuss considerations for in-clinic or in-home applications.

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