O-RA: Osteoarthritis Rehabilitation Assistant

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The global ageing population is rapidly and constantly growing, with 70% of the elderly suffering from Osteoarthritis (OA), a leading cause of disability and depression, robbing countless of their independence needed to address this urgent crisis. To improve patient life expectancy and mentality. We aim to improve access to and effectiveness of Physical Therapy (PT) for individuals with OA by developing O-RA. This state-of-the-art platform utilizes AI technology to optimize therapy performance. The novel AI has been enhanced by developing AI architecture of the Head, Neck, and Backbone that can check the correctness accurately. Furthermore, we create a novel PT recognition system to assist physiotherapists with the individual treatment plan. During PT, falling incidents might occur, making ensuring protection crucial. Therefore, we have developed deep-tech algorithms for detecting and preventing these falls. Also, this innovative AI will be used in mobile phone platforms for individuals' accessibility. To compare the effectiveness with traditional PT, a clinical trial was initiated in which the novel platform can improve traditional PT through a crossover design randomized controlled trial with measurement of the muscle's strength, flexibility, and endurance. Therefore, it is reasonable to conclude that O-RA with enhanced AI can improve the traditional way of PT. Finally, O-RA will revolutionize PT by enhancing therapy to transform the lives of 570M Osteoarthritis sufferers from disability and depression with OA worldwide, restoring hope and improving quality of life.

Awards Won:
Fourth Award of $500
Sigma Xi, The Scientific Research Honor Society: First Life Science Award of $1,500