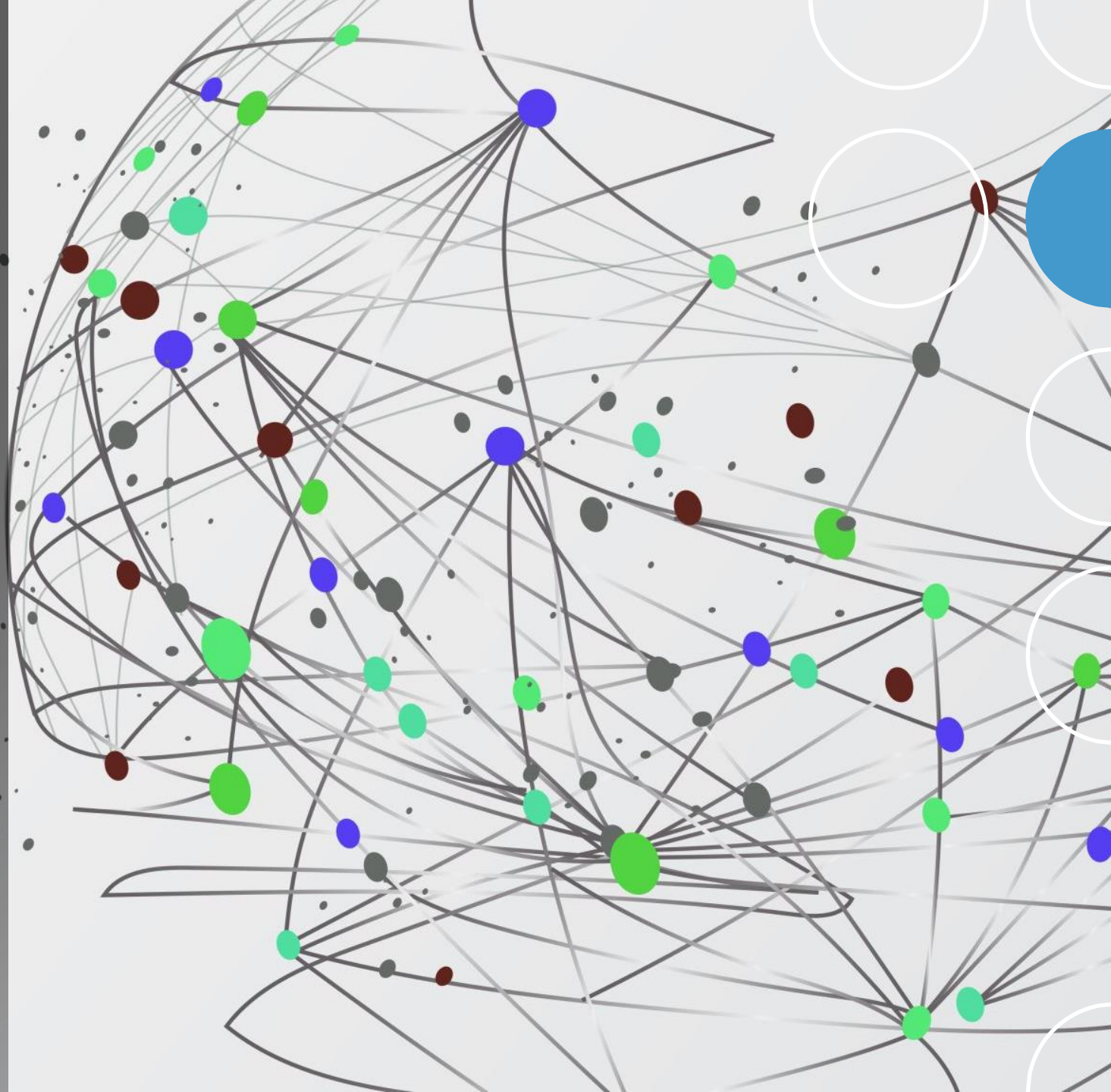


# Research Thrust-4: Human Health and Performance

Sub-Project 1: Evaluate exercise-based strategies for movement enhancement of such individuals as astronauts and those who have impaired gait

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# Statement of R&D Problem

- The astronauts are facing with the high risk of muscle atrophy during space mission. Resistive training equipment have been implemented to help astronaut maintain their muscle strength when working in space station. The Digital Astronaut Simulation team in Simulation and Graphics branch of NASA Johnson Space Center has been developing computational tools used in motion capture system and OpenSim musculoskeletal simulation to study human countermeasures excise inputs to a Vibration Isolation and Stabilization (VIS) system, and there is interest to understand the effects of resistive and aerobic training on joint kinetics and muscle conditioning.
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# Statement of R&D Problem

- The OpenSim based biomechanical simulation has been developed to help evaluate effects of exercise on human biomechanics. We would like to assess whether analyses of muscle properties through a couple of resistive exercises via OpenSim based musculoskeletal modelling may be helpful when developing exercise program and systems used by two populations: i) astronauts to prevent muscle atrophy during space mission, and ii) by individuals with chronic stroke or cerebral palsy with hemiplegic gait for movement rehabilitation.
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