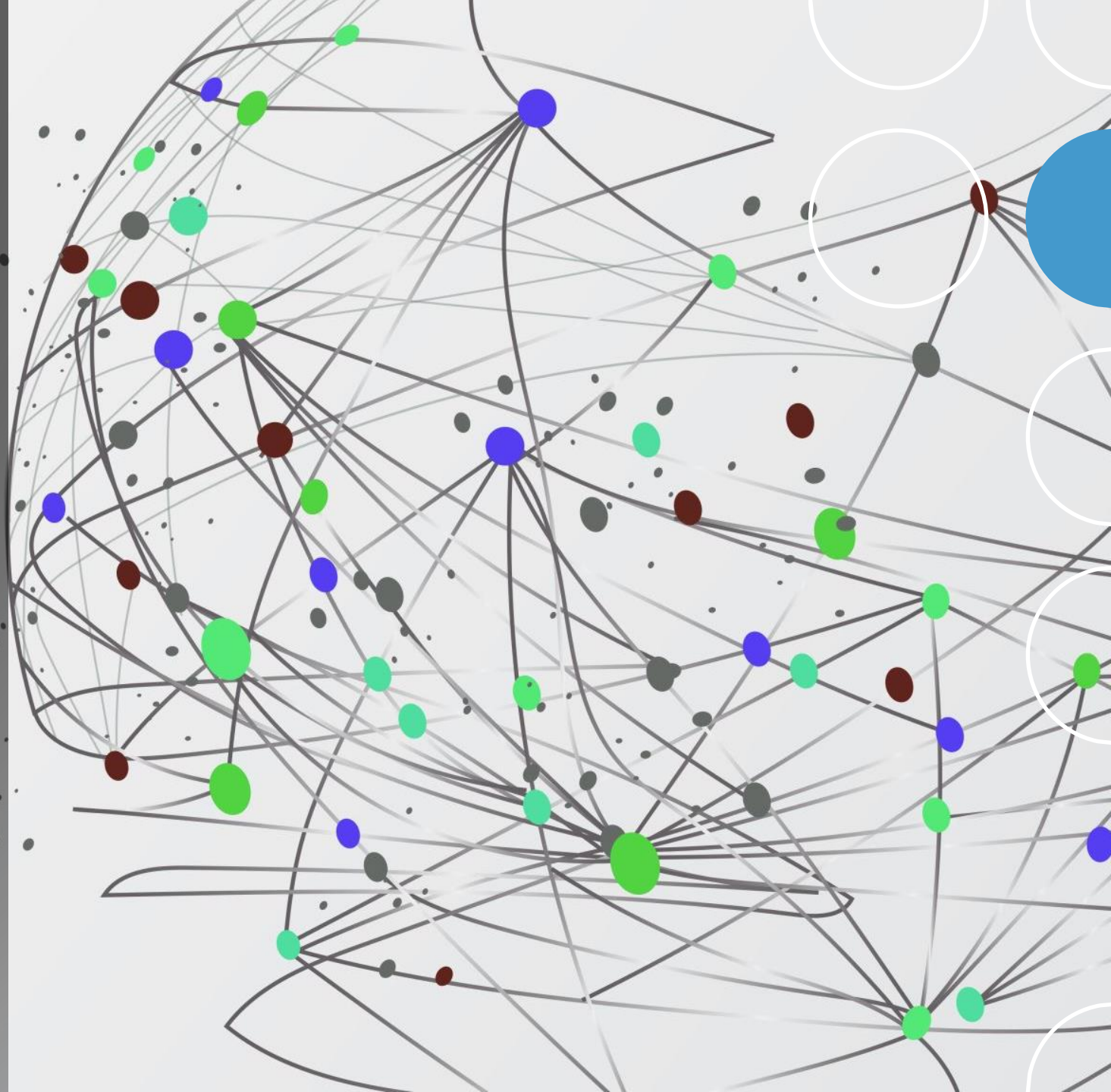
Research Thrust-4: Human Health and Performance

Sub-project 2: Simulate optimal assistive devices to improve joint kinematics and reduce the metabolic cost of walking



Statement of R&D Problem

• It was reported that the current NASA spacesuit Extravehicular Mobility Unit (EMU) has led to discomfort and musculoskeletal injuries during extravehicular activity (EVA) training, due to the lack of mobility in the pressurized suit that makes moving and operating within the suit challenging. EMU can also lead to physical exhaustion of astronauts as they perform strenuous EVAs. The OpenSim based biomechanical simulation has also been developed to help evaluate effects of assistance device-based treatment on human biomechanics. This type of simulation would be very helpful for studying muscular effects during assisted walking, as well as for identifying strength and limitations of devices in their design iteration.