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국문 강연제목: 장애인 및 노약자 일상의 기능적 거동 보완 및 치료를 위한 로봇 기술

영문 강연제목: Functional Robotic Intervention for Individuals with Special Needs

Rehabilitation of neurological movement disorder requires voluntary control and coordination of the body. New types of robotic systems have been suggested to provide a unique environment to promote the rehabilitation of individuals with special needs. Especially, cable-actuated robots are often used for assistive or rehabilitation devices due to small inertia/constraints on the patient's body. Three different interventions with cable-actuated robot will be introduced in this talk. First robotic intervention leverages internal motor learning of the patients by walking in an environment with augmented gravity to strengthen the weak muscles of the leg. The second intervention uses a virtual hand created by the robotic device to correct the center of mass of the patients while walking. The last study uses the cable-actuated robot to train the user beyond their nominal range of motion by utilizing assist-as-needed forces. Other robotic research including mobile robots, prosthetic emulator, or parallel manipulator will be also briefly introduced.

Jiyeon Kang PhD is an associate professor of Gwangju Institute of Science and Technology (GIST) since 2023. Before joining GIST, she worked as an assistant professor in Mechanical and Aerospace Engineering in University at Buffalo (SUNY - Buffalo). She completed her postdoctoral training in rehabilitation biomechanics laboratory at University of Michigan. She obtained her Ph.D. degree in Mechanical Engineering from Columbia University. She received the B.S. and M.S. degrees in Mechanical Engineering from Seoul National University in 2008 and 2010, respectively. She worked as a researcher in Korea Institute of Science and Technology (KIST) for two years developing a power assist robot for active daily living. She served as a workshop chair for IEEE RAS/EMBS BioRob2020 & 2022. Her major interest is in rehabilitation/assistive robots and prosthetic devices to enhance the motor function of various patient groups.