SOFT WEARABLE ROBOTICS FOR REHABILITATION
NOSLJIVA ROBOTIKA V REHABILITACIJI

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Abstract
Human-Robot Interaction (HRI) is the study of interactions between humans and robots. In particular, the major focus is on understanding, designing, and evaluating robotic systems for use by or with humans. This outlook was first illustrated by 20th-century novelist Isaac Asimov. In 1941, in his novel I, Robot, he stated the "Three Laws of Robotics" to determine the idea of safe interaction between robots and humans. With the advances in technology, such as computational capability, artificial intelligence, controllers, and system understanding, we have come a long way since then to allow more natural and effective interaction between humans and robots. In this talk, the speaker highlights the human-robot physical collaboration aspect of HRI. The talk will give a general overview of soft wearable robots for rehabilitation. The speaker will take a few examples of cable-driven robots for pelvic and lower extremity assistance to highlight the design and control of such devices. A few experimental studies will also be presented to narrate the benefits and challenges of the soft wearable robotics.

Key words:
human-robot interaction; robots for rehabilitation; cable-driven robots

Povzetek
Interakcija med človekom in robotom (IČR) preučuje sodelovanje ljudi in robotov. Poseben poudarek daje razumevanju, načrtovanju in vrednotenju robotskih sistemov, ki jih ljudje uporabljajo ali z njimi sodelujejo. Ta vidik je prvi orisal Isaac Asimov, pisatelj iz 20. stoletja. Leta 1941 je v zgodbi »Jaz, robot« zapisal tri zakone robotike, ki določajo varno sodelovanje med roboti in ljudmi. Z naprednimi tehnologijami, kot so računalniške zmožnosti, umetna inteligenca, elektronski kontrolniki in razumevanje sistemov, smo od tistega časa prehodili dolgo pot do bolj naravnega in učinkovitega sodelovanja med ljudmi in roboti. V prispevku bo avtor v okviru IČR osvetlil vidik fizičnega sodelovanja človeka in robota. Podal bo splošen pregled nosljivih robotov za uporabo v rehabilitaciji. Prikazal bo primere visečih robotov za podporo medenice in spodnjih udov, s čimer bo izpostavil načrtovanje in nadzor takih naprav. Predstavil bo tudi nekaj eksperimentalnih raziskav, ki kažejo dobrobiti in izzive v nosljivi robotiki.

Ključne besede:
interakcija med človekom in robotom; rehabilitacijski roboti; viseči roboti

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