Collaborative Assistive Robot for Mobility Enhancement (CARMEN): the bare necessities: assisted wheelchair navigation and beyond

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Deskripsi Lengkap: https://lib.ui.ac.id/detail?id=20398011&lokasi=lokal

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Abstrak

This book presents the collaborative control paradigm. User performance may be indicative of physical/cognitive condition, so it is used to decide how much help is needed. Besides, collaborative control integrates machine and user commands so that people contribute to self-motion at all times. Collaborative control was extensively tested for 3 years using a robotized wheelchair at a rehabilitation hospital in Rome with volunteer inpatients presenting different disabilities, ranging from mild to severe. We also present a taxonomy of common metrics for wheelchair navigation and tests are evaluated accordingly. Obtained results are coherent both from a quantitative and qualitative point of view.