

Simulation-Based Diversity Management in Human-Robot Collaborative Scenarios

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Abstract : In this paper, the influence of diversity-related factors on the design of collaborative scenarios is analysed. Based on the evaluation, a framework for simulating human-robot-collaboration is presented that considers both human factors as well as the overall system performance. The implementation of the model is shown on a real-life scenario from industry and validated in terms of traceability, safety and physical limitations. By comparing scenarios that consider diversity with those only meeting system performance, an overall understanding of individually adapted human-robot-collaborative workspaces is reached. A diversity-related guideline for human-robot-collaborations provides a summary of the research and aids in optimizing future applications. Finally, limitations and future amendments of the model are discussed.

Keywords : diversity, human-machine system, human-robot collaboration, simulation

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