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Mental health in human-cobot interaction in industry: A way to more inclusion?

ERF Workshop: Tools for inclusive robotics: ethics, RRI, taxation & social dialogue

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MindBot: Mental Health promotion of cobot workers in Industry 4.0

MindBot aims at promoting the mental health of the worker and developing technologies capable of reacting appropriately to negative experiences of stress:

- ❑ Improving motivation and well-being of cobot workers
- ❑ Reducing workers mental illness (stress, anxiety)
- ❑ Reducing absenteeism and “presenteeism” and improving productivity

- ➢ The primary objective of the MindBot project is to intervene on technological, relational and organizational aspects of the cobot-based work, in order to match the cobots work to the workers ability
- ➢ Use the findings to also promote the integration of people with autism into the workforce of SMEs

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 847926

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Background

- High numbers of absenteeism and illness due to mental health issues at work
- Megatrends: Overaging society, lack of workers in manual jobs
- Highly skilled workforce with special needs which are ignored

? How can cobots be used to match the workers abilities in order to prevent stress and other negative feelings which deteriorate the worker's mental health?

? Can cobots be used to include persons diagnosed with a neurodevelopmental disorder in SME work forces by matching their abilities with the cobots abilities?

? How do structures and processes have to be adapted to improve working conditions for both enabled and disabled workers?

Methodology

Phase 1: Baseline Assessment

- „Fly-on-the-wall“ observations in six Italian and German companies
- Workers wear smartwatches for a week: both mental and physical stress is measured
- With the Experience Sampling Method (ESM) data is collected with the help of the workers during the real-time unfolding of activities and situations (6-8 times a day, less than 2mins each time)
- Semi-structured interviews and focus groups with workers, foreman, shop floor managers and CEOs
- Questionnaires regarding organizational aspects and workers‘ attitude

Phase 2: Technology Development

- Development of MindBot technologies, e.g. an Avatar to attach to the cobot
- Get the cobot to interact with the worker in an individualized way, matching his/her abilities
- Integration and testing in a controlled environment

Phase 3: Testing and assessment

- Testing of the new system in selected workplaces
- Organizational impact assessment with questionnaires

Persons diagnosed with autism spectrum disorders (ASD) will be involved in the project as advisors and evaluators of the project outcome

MindBot partners

- IRCCS – Associazione la Nostra Famiglia ‘Istitutio scientifico Eugenio Medea (MEDEA), Italy - Coordinator
- Universita degli Studi di Milano (UMIL), Italy
- Consiglio Nazionale delle Ricerche (CNR), Italy
- Biorics NV, Belgium
- Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (DFKI), Germany
- Sveuciliste u Rijeci, Filozofski Fakultet U Rijeci (FFRI), Croatia
- KUKA Deutschland GMBH, Germany
- Universität Augsburg (UAU), Germany
- Ministarstvo rada i mirovinskog sustava (MRMS), Croatia

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Thank you very much for your attention!

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