APECGR

Artificial Personality for Cognitive Guidance and Recommendation Systems

Pro²Future

Markus Laube[1], Bernhard Anzengruber-Tanase[1], Michael Haslgrübler[1], Alois Ferscha[1,2]
Pro2Future GmbH[1], JKU-IPC (Institute for Pervasive Computing)[2]
[1] Pro2Future GmbH, Altenberger Strasse 69, 4040 Linz
[2] Johannes Kepler University Linz, Altenberger Strasse 69, 4040 Linz

MOTIVATION & GOALS

- Improve **interaction** quality between worker and machine/arc welder
- Support arc **welder maintenance** for the worker
- Provide feedback **quality & guidance** through the welding processes

- Catalyze an **artificial personality** to enable adaptive communication
- Reveal **occuring problems** during the welding process
- Recommend **corrective actions** to the welder during the work process

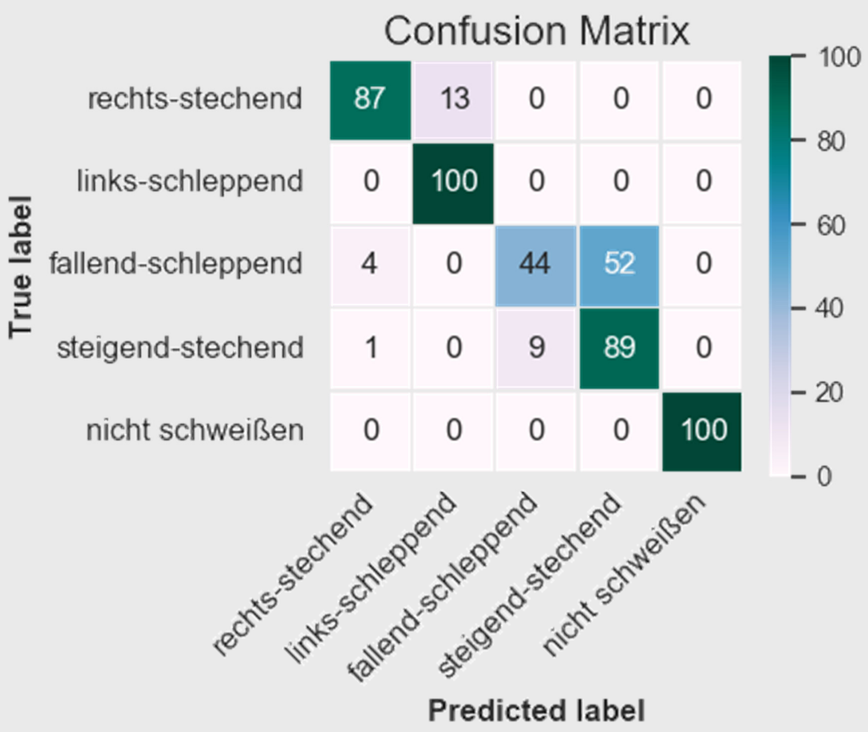
Project FactBox

Project Name APECGR
Project ID MFP II 1.2
Duration 36 Months

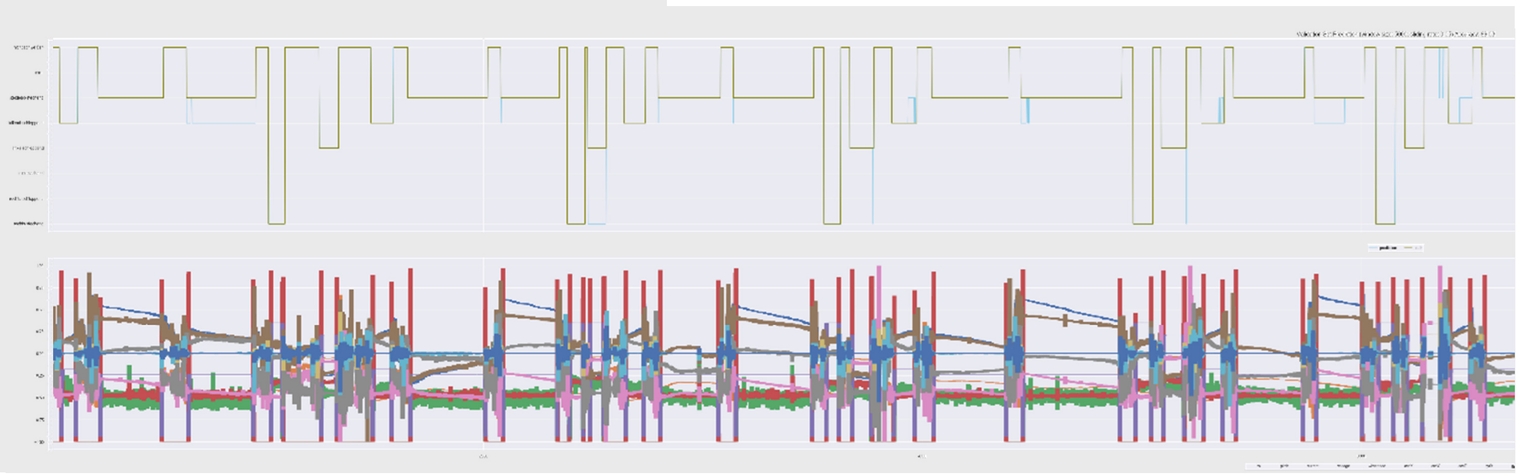
Area 1
Perception and Aware Systems

Project Lead
Univ.-Prof. Dr. Alois Ferscha

PRELIMINARY RESULTS



- Recognition of welding technique for workflow detection was well achieved.
- Results inform recognition of problems during welding process as well as provision of feedback.



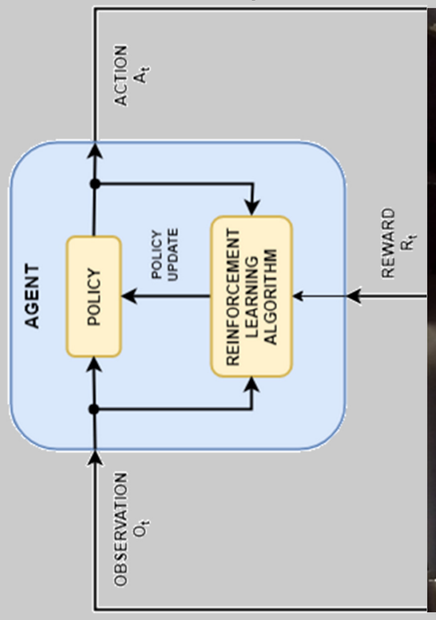
CONTRIBUTION

Scientific contribution
Skill level detection of industrial welders using IMU data

Economic contribution
Reinforcement learning to improve man-machine interaction
Feedback system via embedded actuators & screens

ENVIRONMENT & SYSTEM ARCHITECTURE

RL cycle



Environment and System Components

Feedback (visual) Feedback (tactile) Sensor (pupil, viewpoint) Groundtruth (markers) Sensor (imu, welding)

Observation:
Realtime multi-sensor data
Metadata derived from AI algorithms

Action:
Active interactions with arc welder
Active interaction with feedback system
Passive reactions to real time feedback

Contact: DI Markus Laube, Pro2Future GmbH, markus.laube@pro2future.at, +43 732 2468 - 9467
Acknowledgement: This work was supported by Pro²Future (FFG, 881844) and Fronius International GmbH.