Colaborative Robots

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Abstract: *TO DO !!!!!!!!! OSNOVA: Co je robot, Co je kobot, jak jsou aktuálně řešené, jaké mají problémy*

Keywords: *Industrial Robots, Colaborative robots, Hazards around robots*

1 Introduction

1.1 Definitions of Industrial Robots and Collaborative Robots

1.1.1 Robot

Robot is programmed actuated mechanism with a degree of autonomy to perform locomotion, manipulation or positioning. A robot includes control system. Examples of mechanical structure of robots are manipulator, mobile platform and wearable robot.[1]

1.1.2 Industrial Robot

Automatically controlled, reprogrammable multipurpose manipulator, programmable in three or more axes, which can be either fixed in place or fixed to mobile platform for use in automation applications in an industrial environment.[1]

1.1.3 Human-robot collaboration

Collaboration is defined as: operation by purposely designed robots and person working within the same space.[1]

1.1.4 Cobot

COBOTS, which is short for COllaborative roBOTS, are industrial robots specifically designed to work with human coworker in the same workspace, this brings a lot of difficulties and challenges to the design and implementation of these workplaces.

2 Common problems when implementing cobots

As is with every heavy machinery, robots too can be dangerous if not used correctly. As a result of this fact there are categories of injuries and common sources of these injuries defined by Occupational Safety and Health Administration (OSHA).

Categories of hazards associated with robots

1. Impact, Collision, or other "Struck-by/Caught-between" hazards

   Caused by unpredicted or unexpected movement of robot, end-effector or peripheral equipment.

2. Crushing and Trapping Hazards

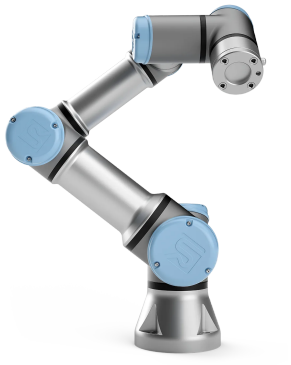

Figure 1: Please write your figure caption here

Worker's limb or other body part being trapped within or between robot or its equipment.

3. Struck-by Projectiles

   Breakdown of workpiece, end-effector or peripheral equipment may result in unpredictable flying objects, posing danger to other machines and people.

4. Electrical Hazards

   Robots power system can present arc flashes, shocks, fire and/or other electrical hazarads.

5. asd

Common sources of failure and accidents

OSHA organization defines 7 main

2.1 technical and safety limitations

Due to the kind of work that are cobots meant to do, and the fact that they are supposed to work in the same workspace as human workers, they can't have too fast movement, else they are risking fast and dangerous collision with workers that may result in serious injuries. Cobots also have relatively low payload capacity compared to *"normal"* industrial robots of same size, again, due to safety reasons, so they don't have too much power to injure people around them.[2]

3 Conclusion

References

[1] Iso 8373:2021(en) robotics - vocabulary. 2021.
[2] 4 common challenges in implementing cobots, 2024 ©.