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## Automated sample loading using Panda cobot from Franka Emika

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Robots and cobots (collaborative robots) were designed to change manufacturing and production processes at factories. Typical application of an industrial robot would be to replace a human on repetitive tasks, which involve endurance, speed, and precision. Industrial robots usually operate in environments isolated from human contact. Instead, cobots are designed to provide human robot interaction within a shared space: they are built out of lightweight materials with rounded edges, demonstrate human-like speed and force, and are equipped with torque sensors to handle collisions.

Neutron hall is an environment with extra safety protocols due to its radiation sources. One of the strategies to mitigate the risk of radiation exposure would be to reduce presence of workers in the hall to minimal times if not to avoid completely. For that certain operations could be automated and executed in a given time by a robot.

In this work we demonstrate an automated system for sample loading to one of the instruments, located in the neutron hall of Heinz Maier-Leibnitz Zentrum. This system is built using Panda cobot from Franka Emika GmbH. The control software is written in C++ [1] and is integrated into TANGO network at MLZ.

[1] <https://forge.frm2.tum.de/review/plugins/gitiles/jcns/tango/franka/+/refs/heads/master>

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