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## **Robotic solutions for the remote inspection and maintenance of particle accelerators**

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Intelligent robotic systems are becoming essential for inspection, maintenance, and repair tasks, both for the validation of systems before installation as well as during operation. Aiming to increase personnel safety and machine availability, robots can perform repetitive or dangerous tasks that humans either prefer to avoid or are unable to complete due to hazards, size or access constraints. At the European Organization for Nuclear Research (CERN), robots are regularly used for such tasks in highly radioactive beam lines, as well as for decommissioning. This work describes the state of the art industrial and experimental robotics at CERN, as well as the application of artificial intelligence to robotics activities. It includes a review of the main types of interventions undertaken, focusing on the personnel safety impact and the improvement of accelerators availability. Research and development in robotics at CERN is also described, along with the results of commissioning and operation of novel robotic controls.

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### **Footnotes**

### **I have read and accept the Privacy Policy Statement**

Yes

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