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AI and ML integration for beamline optimization and virtual assistance at the SOLARIS synchrotron

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The future of synchrotron beamline operations is poised for a transformative leap with advancements in artificial intelligence (AI) and machine learning (ML). While SOLARIS National Synchrotron Radiation Centre* has yet to integrate these technologies, their potential to revolutionize experiments, data analysis, and user interactions is immense. AI-driven automation promises real-time assistance in optimizing beamline experiments, minimizing manual intervention while enhancing precision. Machine learning algorithms will unlock deeper insights from complex datasets, facilitating faster, more accurate interpretations. Additionally, intelligent virtual agents could redefine how researchers interact with beamline controls, offering predictive guidance and adaptive optimization. As SOLARIS expands its capabilities, embracing AI and ML will position it at the forefront of scientific innovation, ensuring seamless, efficient, and accessible synchrotron research for future generations.

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Footnotes

- <https://synchrotron.uj.edu.pl/>

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