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SERVOTEH

IVA 28
CNC MACHINING



Contact

For more information about the project,
scan the QR code below:



Address:

Kraljice Marije 16, 11120 Belgrade



Contact number:

+ 381 (0) 11 3302 414



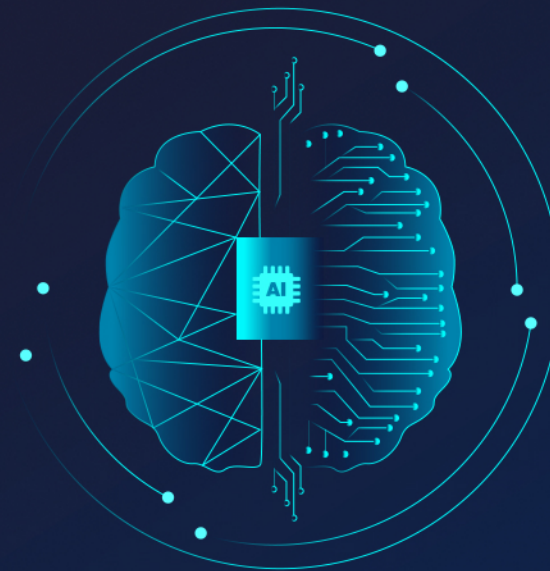
Email:

mission4-0@mas.bg.ac.rs



Science Fund
of the Republic of Serbia

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MISSION4.0



Science Fund
of the Republic of Serbia

Project info

The need for diverse and customized products requires an effective dynamic integrated process planning and scheduling of the production system. For this system to be efficient, it is necessary to generate optimal mobile robot trajectories in order to carry out all transportation tasks defined by the scheduling plan. Furthermore, the mobile robot is required to reliably execute specified tasks, achieve communication with other manufacturing entities, and actively protect from cyber-attacks.

In order to achieve adaptable, reconfigurable, and intelligent cyber-physical systems of Industry 4.0, the MISSION4.0 project proposes the development of a new systematic methodology that will integrate artificial intelligence techniques for deep machine learning and biologically inspired multi-objective optimization.

Goals

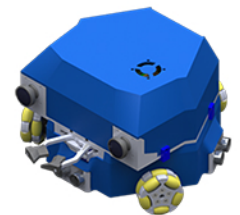
1. The development of swarm intelligence-based methodologies for dynamic integrated process planning and scheduling of cyber-physical production systems.
2. The development of new AI-based stereo vision control system for mobile robots used in manufacturing processes and transportation tasks within the manufacturing environment.
3. The development of new real-time applicable deep learning-based algorithms for detection of cyber-attacks on data communicated between cyber-physical systems in industrial applications.
4. The integration of the developed methodologies in order to create reconfigurable manufacturing systems based on AI technologies and ethical principles in Industry 4.0.

Mobile robots

1. RAICO (Robot with Artificial Intelligence based COgnition)
2. DOMINO (Deep learning based Omnidirectional Mobile robot with INTElligent cOntrol)



RAICO



DOMINO



ARTIFICIAL
INTELLIGENCE



COGNITIVE
ROBOTICS



MACHINE
VISION



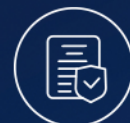
INTELLIGENT
CONTROL



MACHINE
LEARNING



AUTONOMOUS
NAVIGATION



PRODUCTION
OPTIMIZATION



CYBER
SECURITY

Impact

ethical principles
higher productivity
efficient and safe transportation
smart industry
expert development
student education
scientific research

