

Cable driven parallel robots for manipulation and plate transport

ROCKET project

IRT
JULES
VERNE

The project aims at developing an industrial CDPR for handling and sorting of parts by means of a man/machine interface with augmented reality.

Technical and economic impacts

- ▶ Twice cheaper than the standard systems
- ▶ Handling parts can be faster than with standard systems
- ▶ Better control of the pieces: position, orientation, traceability

Keywords

Cable driven parallel robots
Augmented reality // Simulation
Models // Control system



INDUSTRIAL CONTEXT.....

CDPRs are complementary to the classical six-revolute industrial serial robots in terms of workspace size, stiffness, dynamic performance and heavy payload capacity. They are also cheaper and less bulky than the industrial serial robots. The most widespread CDPR in the world is the Skycam, which is maneuvered through three dimensions in the open space over a playing area of stadium or arena by computer-controlled cable-driven system. It brings video-game-like camera angles to television sports coverage.



INNOVATIVES FEATURES.....

- ▶ Adding augmented reality in the man/machine interface allowing the operator to use intuitively the technology, with a colour code for instance.
- ▶ Reliability of the robot models and the simulator, in order to assess the capacity of the robot to carry out heavy loads, in extreme outdoor environments and in large scale areas.
- ▶ Better control of the pieces, traceability, ergonomics
- ▶ Maintenance of the system: better accessibility to mechanical and electrical pieces as the motors, gearheads and winches are mounted to the floor.



INDUSTRIAL APPLICATIONS

At the end of the project, the robot could be installed in a large plant for handling and storing parts efficiently. The operator will control the robot thanks to a man-machine interface with augmented reality.

Partners

- ▶ IRT JULES VERNE
- ▶ B&R AUTOMATION
- ▶ CLARTE
- ▶ CLEMESSY
- ▶ STX FRANCE
- ▶ CNRS (IRCCYN)

Equipment

- ▶ Large scale CDPR

Budget

- ▶ 1 223 k€

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