FONDAZIONE BRUNO KESSLER
MAGAZINE

Augmented reality for industrial maintenance

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PAMA Rovereto adopted an FBK project thanks to HIT and Confindustria Trento Digital Innovation Hub

Rovereto based **PAMA**, a world leader in the manufacturing of large machine tools, has signed an agreement with Fondazione Bruno Kessler to adopt an innovative technology that involves the development of computer vision modules for remote problem resolution and industrial maintenance through an augmented reality based application. The agreement was facilitated by **Hub Innovazione Trentino (HIT)**, a foundation that fosters dialogue between research and businesses by facilitating projects for the transfer of new technologies for local innovation, thanks to the work carried outwithin **Digital Innovation Hub** promoted with **Confindustria Trento** The solution will make it possible to **drastically reduce** international travel by expert technicians and its costs, as well as prove in line with current international regulations to **contain the Covid-19 pandemic.**

The project originated within **FBK's Vision Technologies Research Unit (TeV)** led by **Stefano Messelodi.** Analyzing issues, looking for solutions, acting remotely at intercontinental distances. All this will soon be possible for Rovereto based company PAMA thanks to the technology specifically studied by the unit dedicated to "**Vision Technologies**" at **Fondazione Bruno Kessler.**

The agreement will see FBK committed for about 10 months and will allow the company to «*take advantage of modern* ***artificial vision and augmented reality techniques*** *to facilitate monitoring and troubleshooting operations of large plants. Through the coordination of European projects, FBK's TeV Unit has gained solid experience in the field of augmented reality, which has been added to the well-established expertise in artificial vision. The project with Pama represents the first experience of concrete application in the industrial field*»- **FBK researcher Stefano Messelodi** explained.

The project paves the way for further collaborations between the Rovereto company and the Povo research center, and could favor the technological development of PAMA by studying electronic and IT solutions useful for the mechatronic development of the company specialized in the

construction of large machinery for industrial production.

FBK's **computer vision** modules will enable PAMA to process images captured by a tablet's camera to locate, recognize and calculate the position of components of industrial machinery under maintenance. During the work, we will evaluate which type of vision algorithms to use for automated machine recognition based on the requirements of the use case, the structure of the system and the environment lighting conditions. The technology will therefore be specifically designed for the needs and objectives of the case, facilitating remote operations, the integration of information, executive methods that will facilitate the international development of the company. PAMA currently exports more than 80% of its production, mainly to China, India, Russia, Germany and the United States, where the Trentino-based company operates with its own direct sales and technical assistance structures. "*Pama considers it essential to undertake innovation initiatives aimed at implementing* ***Industry 4.0*** *technologies in its product range, in order to strengthen its positioning in the market* – **Alberto Nainer, Pama's research and development director**, said – *and this project is part of the work that Pama is undertaking in the 4.0 and IoT field. Augmented reality technology will be integrated with big data prognostics and assisted maintenance with the aim of making the latter more interactive and functional in the production environment. A combination of markers and feature tracking methods will be used for the relative positioning between operator and component, with real-time updating of the information useful to the maintainer made accessible by the cloud connection*".

The technology transfer operation is the result of a cooperation effort made possible thanks to the **Digital Innovation Hub**. The DIH is a point of reference to support companies in the implementation of automation and digital transformation strategies created following an agreement signed by **Confindustria Trento** and **HIT** with the main regional players. A **platform** that supports companies with digital transformation, analyzing their technology and innovation needs, offering solutions available above all in the Trentino research system.
This is an initiative that can really foster innovation by fueling the possible synergies between research and business, locally.

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