



## **BALYO announces the opening in Singapore of a robotic perception lab for unpredictable environments**

- **Opening of the *Advanced Perception Lab* to strengthen BALYO's technological lead in robotic solutions for unpredictable environments**
- **Dr. Nizar Ouarti, a researcher in motion perception at the Sorbonne and the Pierre and Marie Curie University, has joined BALYO to oversee research in this field**
- **Singapore: a strategic location in the heart of the world's connected mobility ecosystem**

Ivry-sur-Seine, France, November 28, 2018, 6:00 PM CET – **BALYO** (FR0013258399, Ticker: BALYO, eligible for the PEA-PME plan), a technological leader in the design and development of innovative robotic solutions for material handling trucks, announces today the launch in Singapore of the *Advanced Perception Lab*, a research lab dedicated to bolstering BALYO's technological lead in the field of robotic perception for unpredictable environments, and the hiring of Dr. Nizar Ouarti who will be responsible for the research strategy in this field.

**Fabien Bardinet, Chairman and Chief Executive Officer**, stated: *"Thanks to the Advanced Perception Lab, BALYO will bolster its technological lead. Its location - in the heart of a unique hub specialized in 3D perception, next to international leaders in autonomous connected mobility - is a key advantage. It will ensure the integration of the latest robotic perception technology developments into our solutions, thereby significantly improving the safety of complex warehousing operations and the productivity of our customers' operations."*

### **Opening of the *Advanced Perception Lab* to strengthen BALYO's technological lead in robotic solutions for unpredictable environments**

BALYO's robotic solutions enable the autonomous, optimized navigation of trucks in diverse industrial environments thanks to the company's unique geoguidance navigation technology, with no added infrastructure required. BALYO's core technology is based on an algorithm that instantaneously calculates the robot's position using the data collected from a navigation laser. Over recent years, BALYO has acquired unique experience from the deployment of its technologies and a large number of robots.

When combined with this unique localization technology for closed environments, 3D vision and perception techniques allow the robotic trucks to recognize objects and avoid obstacles. These features, based on a new generation of 3D sensors and BALYO's unique expertise that relies on an image-processing algorithm, provide the robots with even greater performance. 3D perception also improves "smart" safety by boosting the robots' ability to recognize the type of pallets. Additionally, this process – a true breakthrough for the future - enables the navigation of robots in environments that are increasingly unpredictable.

The goal of the *Advanced Perception Lab*, BALYO's new ground-breaking lab, is to explore further technological development that may be possible in this field to constantly improve the operational performance of its robotic solutions.



## Singapore: a strategic location in the heart of the world's connected mobility ecosystem

Singapore is often called a “smart city” as it is renowned for its leadership in cutting-edge technologies. In particular, it is considered one of the major hubs for robotics across the planet. This expertise is based on a dense network of academics and private operators. In recent years, Singapore has seen the emergence of many innovative projects, such as Dassault Systèmes’ 3D city modeling and the presence of NuTonomy, a company specialized in driverless vehicles, which results from a technology transfer from MIT acquired by the automotive supplier Delphi.

In terms of academia, two Singaporean universities (NUS and NTU) are regularly ranked amongst the world's Top 20 most advanced in technology.

## Dr. Nizar Ouarti, a researcher in motion perception at the Sorbonne and the Pierre and Marie Curie University, has joined BALYO to oversee research in this field

Dr. Nizar Ouarti is a renowned international researcher in the field of visual perception. He defended his doctoral thesis on this topic at the Collège de France. After a number of years at the French Institute for Intelligent Systems and Robotics (ISIR), a joint UPMC-CNRS multidisciplinary research center, Dr. Nizar Ouarti worked on the development of an autonomous robot to navigate inside trains in Singapore in partnership with the National University of Singapore (NUS).

At BALYO, Dr. Nizar Ouarti will be responsible for research in the field of 3D perception and the management of related academic theses in Singapore. These theses will be supervised in partnership with Singaporean universities and state institutions as well as French universities and labs.

Dr. Nizar Ouarti stated, *“It is an honor to join BALYO, the leader in innovative robotic solutions for material handling trucks. The worldwide deployment of these trucks in the warehouses and factories of major industry leaders offers a unique opportunity for me to contribute my scientific expertise in visual perception, which I have acquired through my scientific and operational work. I am familiar with all of the stakeholders, both in academia and industry, in the world of connected autonomous mobility, which will help me productively head the Advanced Perception Lab in Singapore and ensure it is a key driver in the development of BALYO's cutting-edge technology.”*

## ABOUT BALYO

BALYO transforms standard forklift trucks into standalone intelligent robots thanks to its breakthrough proprietary Driven by Balyo™ technology. The geoguidance navigation system developed by BALYO allows vehicles equipped with the system to locate their position and navigate autonomously inside buildings. Within the automated handling vehicle market, BALYO has entered into two strategic agreements with Kion Group AG (Linde Material Handling's parent company) and Hyster-Yale Group, two major operators in the material handling sector. BALYO is present in three major geographic regions (Americas, Europe and Asia-Pacific). Its sales revenue reached €16.4 million in 2017. For more information, please visit our website at [www.balyo.com](http://www.balyo.com).



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