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INDUSTRIAL ROBOTS GUIDED BY INTELLIGENT SYSTEM IN COMPLEX ENVIRONMENT

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ABSTRACT
One of the basic questions in robot use is: which is the way of solwing their guidance to unraval a problem of object undefined position and orientation in robots working area. This paper describes techniques of identification and classification of industrial robot guided by intelligent system, working tasks, methods of object recordings, picture processing and robot guidance in space.
Keywords: industrial robots, intelligent system, robotics vision

1. INTRODUCTION
To have a successful development of the new products, there is needed that manufacturing system have more flexibility at the manufacturing process control. That is possible to provide if the previously are made software and hardware architecture integration of defined flexible manufacturing system [4][5]. The important role plays in this all the artificial intelligence regarding to artificial vision at the environment leading of industry robots whereby they become the intelligent industry robots [5][7].
The development and realization of the integrated control systems purpose usage of the new technologies that need to enable intelligent computing from network sensors placed in this environment and two-directed communication between robot and environment.
The purpose for robot successfully action in the complex environment is advanced control methods with hybrid systems.
Using defined sensors as cameras, autonomous industry robot can provide adaptive behaviour. Under that is understood the flexible changing in the working environment to make intelligent tasks as object recognizing and identification and manipulating with them [5].
The intelligent industry robots using camera for object recognizing are more superior in according to conventional robot control because on this way the positions and object orientation that are recognized can be random in the defined robot working room.

2. THE IDENTIFICATION AND CLASSIFICATION OF ROBOT TECHNOLOGICAL TASKS GUIDED BY INTELLIGENT SYSTEMS
The robot systems are equipped by external sensors provided the robot control device by enough information number for making of defined tasks. The task performances, at which is important to research the working environment, to recognize the present objects and to define their position and orientation, is possible with robot sight system [3][9].

The ground tasks of robot sight system is picture digitalization and filtering because of object recognizing and locating that is placed inside of working environment [7].
The processing of finding and allocating of wanted objects requires correctly following of operation flow as presented by the figure 1.

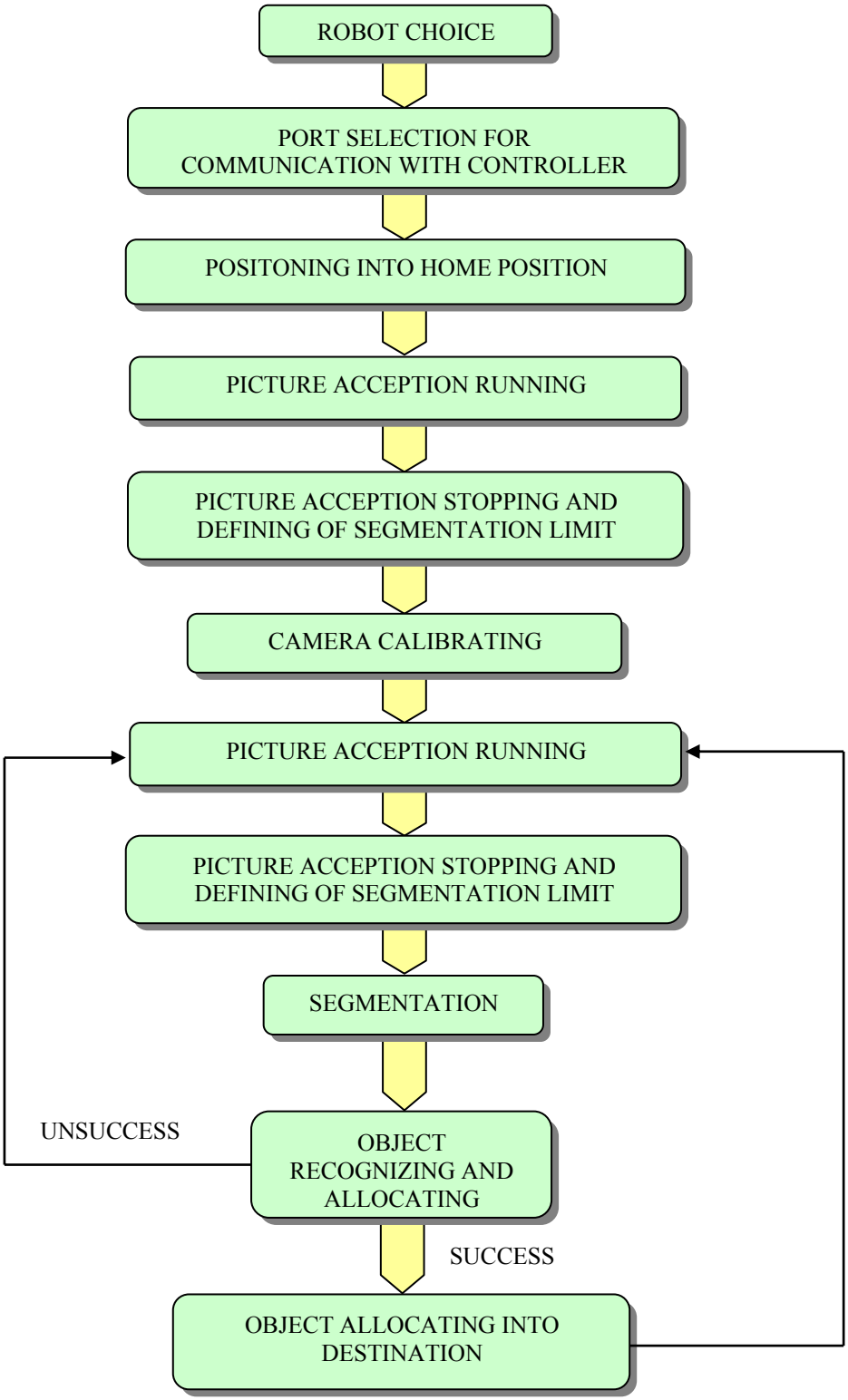

Figure 1. Scheme presentation of object finding and allocating process

Before the identification process there is needed to store objects into data base that can be find in the robot working environment. The data base can be additionally filled by new objects. At the same identification process are read objects from base to compare the objects which are placed in the camera working environment [7].
Before picture segmentation there is needed to calibrate camera. Under segmentation process is understood taking out of individual objects from back. After segmentation performance there is made object recognizing from scene so the data of identified objects are written into list containing object name, coordinates in the robot coordinated system, neglected angle, destined coordinates and orientation at the robot coordinated system.
After recognizing performance follows allocating into defined destination position.

3. ROOM INDUSTRY ROBOT CONTROL

Control strategy with industry robot with visual sensor-camera understands such data processing to use recognizing system with robot learning for providing of wanted robot gripper motion. To provide that, there is needed defined control concept [10].

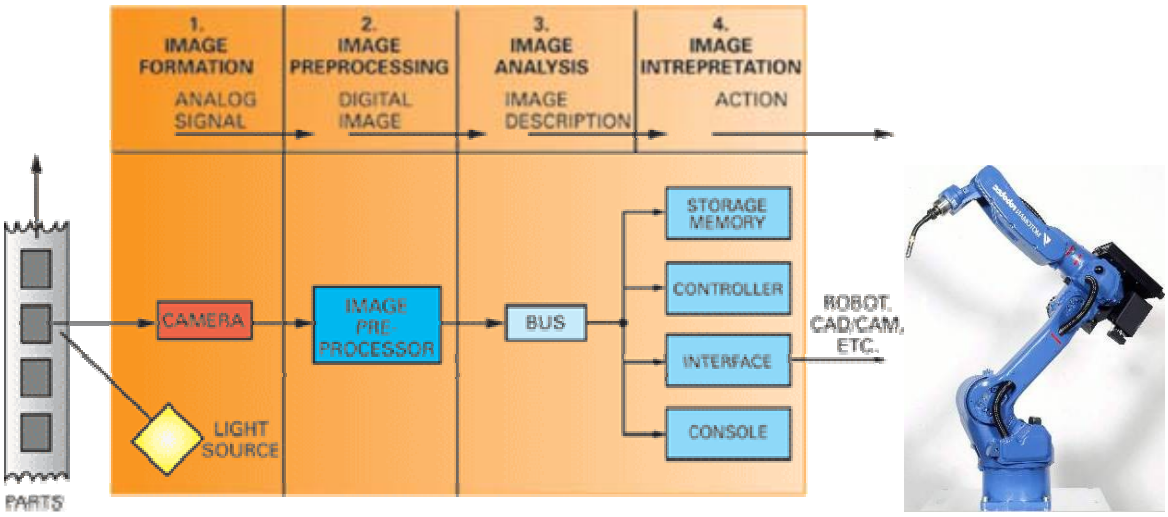

Figure 2. Industry robot control concept

At the following figure are presented some examples of intelligent system application for robot guidance.

Figure 3. Intelligent robot control

As there is seen from example, intelligent system application understands that these systems must work at the dynamic and unstationary situations of reasoning and sensor information processing at the real time.

4. CONCLUSION

The providing of intelligent control of autonomous industry robots using robot sight as mean for object recognizing, understands artificial intelligence application.
Thanking to robot according to artificial sight, technical productions have oftener the properties that are possible to compare with human abilities. The artificial vision has the aim computer, electronics and robotics binding to achieve human visual ability.
So from previous discussed can be concluded that intelligent control of industry robot provides required performances bound with defined aim through researching of own knowledge base.
But more robot requirement is to have power among own dynamics to recognize dynamic environment influences to provide regular effect in the undefined environment.

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