



### PROPUESTA DE TRABAJO FIN DE MASTER

Número de Trabajo	232417	(no rellenar)
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Título:	Vision Guided 6-axis Robotic Arm for Quality Inspection on a Conveyor Line		
Empresa/Institución:	Grupo de Investigación SiMuR, Universidad de Oviedo		
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#### Resumen (objetivos, metodología, planificación temporal):

##### DESCRIPTION AND GOALS

The work is based on the cobot, Universal Robot UR3e available at Robotics Lab. It focuses on replicating an industrial scenario to pick and place the objects moving on a conveyor line. The vision guided robotic arm detects and classifies the objects present on the line based on trained neural networks to perform the pick & place actions.

The objectives of the work are:

1. Integrating the Robot with a depth camera and a two-fingers gripper.
2. Design and integration of the robotic cell: conveyor system with robot and sensors.
3. Develop object detection algorithm for classification and pick and place action.
4. Palletization of classified objects (optional).

##### PLANNING

Months/Work Details	March	April				May				June				July			
	W 4	W 1	W 2	W 3	W 4	W 1	W 2	W 3	W 4	W 1	W 2	W 3	W 4	W 1	W 2	W 3	W 4
1. Objective Scope and Definition																	
2. Research and Literature Review																	
3. Hardware and Software Selection and Installation																	
4. Integration of UR3E Robot and 3D Vision Camera & Gripper																	
5. Conceptual and Detailed design of a mini conveyor line.																	
6. Material Selection and Manufacturing the conveyor.																	
7. Integration of Conveyor Line with the Robot Test bench																	
8. Algorithm Development and Simulation																	
9. Testing and Validation																	
10. Documentation and Iterative Improvement																	
11. Presentation and Defense																	

Fecha firma (tutor): 8/5/2024

Fecha aprobación (Comisión académica):

Alumno: Bibek Gupta

Tutor académico: Juan Carlos Álvarez Álvarez ..

Indicar el suplente del tutor: Diego Álvarez Prieto .....

NOTA: Este documento debe ser firmado por el alumno y por el profesor tutor académico, y entregado al Coordinador del Máster.