

 	DESCRIPCIÓN BIBLIOGRÁFICA DEL TRABAJO FIN DE ESTUDIOS IKASKETEN AMAIERAKO LANARI BURUZKO BIBLIOGRAFIAREN DESKRIBAPENA	PC 934 ANX1
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Campos OBLIGATORIOS / NAHITAEZ bete beharreko eremuak	
AÑO / URTEA (20xx): 2018	Trabajo Fin de Grado (TFG) / Gradu Amaierako Lana (GAL) <input type="checkbox"/> Trabajo Fin de Máster (TFM) / Master Amaierako Lana (MAL) <input checked="" type="checkbox"/>
Título del TFG/TFM / GAL/MALaren izenburua: Optical defects detection on eye surgery lenses	
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Inglés Ingelesa	Abstract (Resumen de 100-250 palabras) / Abstract (Laburpena 100-250 hitzetan)
	<p>Polyoptics is a German company focused on the production of plastic parts used in optics and high precision solutions. The company offers a broad range of products, from common LED lighting applications and lighting systems for cars to lenses for eye surgery and optic sensors.</p> <p>This project was proposed by Polyoptics GmbH to increase its degree of automation and to improve the productivity and quality of one of their products. The objective is to detect defects (black spots, scratches, air bubbles) on lenses used for eye surgery. These lenses have a diameter of around 10 to 12 mm and its defects are usually around 50 – 100 micrometers. This make it impossible to detect the defects by simple eye inspection and a microscope has to be used.</p> <p>The proposed solution was to use a Raspberry Pi 3 and a Raspberry Pi Camera Module to take pictures of the lenses and detect defects using Python programming. After this, a signal would be sent to the robot that takes the lenses out of the injection machine so that it discards the defective lenses while it waits for the next lens to be produced. This project proves that in this case, little investment is needed to solve a complex problem and that similar ideas could be used for problems of the same kind in other lenses.</p>
	Materias o Palabras Clave (máximo 5) / Gaiak edo hitz gakoak (gehienez 5)
Lens, injection machine, defects detection, air bubble, python	

Campos OPTATIVOS / AUKERAKO eremuak	
Castellano Gaztelania	Abstract (Resumen de 100-250 palabras) / Abstract (Laburpena 100-250 hitzetan)
	Materias o Palabras Clave (máximo 5) / Gaiak edo hitz gakoak (gehienez 5)

Euskera	Abstract (Resumen de 100-250 palabras) // Abstract (Laburpena 100-250 hitzetan)
Euskara	Materias o Palabras Clave (máximo 5) / Gaiak edo hitz gakoak (gehienez 5)
Otro Idioma	Abstract (Resumen de 100-250 palabras) // Abstract (Laburpena 100-250 hitzetan)
Beste hizk. bat	Materias o Palabras Clave (máximo 5) / Gaiak edo hitz gakoak (gehienez 5)