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Se buscan candidatos/as para solicitud de beca FPU en el Color Imaging Lab del Departamento de Óptica de la Universidad de Granada

Se ofrece la posibilidad de solicitar una beca FPU para la realización del proyecto denominado: "Recuperación de imágenes hiperespectrales en el visible e infrarrojo deterioradas por la atmósfera para la mejora de los sistemas de visión de vuelo"

Responsables del proyecto: Javier Hernández Andrés

Resumen del proyecto:

Despite the advances in the aviation industry, bad visibility still is an important issue for pilots, especially during critical operations such as approach and landing. Recently new rules were published for landing operations with enhanced flight vision system (EFVS). A big challenge in EFVSs is to improve image quality with low visibility, in adverse weather conditions such as with fog or haze.

Under fog or haze images are degraded due to scattering and attenuation of atmospheric particles, reducing the contrast and visibility, changing the color and making the object features difficult to identify by a humans and by computer vision systems. This degradation depends on the distance, the density of atmospheric particles and on the wavelength. The techniques to eliminate this degradation, named as dehazing (or defogging), are crucial in EFVS and other applications such as air and maritime transport, surveillance, driver assistance systems, remote sensing.

Dehazing is a multidisciplinary challenge, since it requires the knowledge of several fields: meteorology to model fog or haze, physical models to predict how light is affected by the atmosphere, and computer vision & image processing to recover the parameters of the scene.

For most scientific and technological applications of dehazing, including EFVS in aviation industry, it is essential that methods work automatically, in real time, without user's interaction and without knowing atmospheric parameters. Our group proposed in 2015 a method based on the dichromatic model of atmospheric scattering and on the constancy of the response ratio of a camera's RGB sensors, that only requires a previous segmentation of the image to group the pixels located at the same distance.

Recently technological advances in image sensors and spectral filtering have allowed the proliferation of multispectral and hyperspectral systems for image capture in a wide range of applications. However, they have not yet been used in dehazing methods despite their potential.

Requisitos de los candidatos/as:

- * Grado en Física, Informática, Telecomunicaciones, Matemáticas, o área similar.



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- * Máster en áreas afines.
- * Competencia lingüística en inglés (mínimo B2).
- * Conocimiento de lenguaje de programación tipo Matlab, Python, C++, etc.

Información adicional:

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Color Imaging Lab

Departamento de Óptica

Universidad de Granada

International Erasmus+ master COSI "Computational Color and Spectral Imaging"