

An XR project at a research and design lab within Universitat Pompeu Fabra in Barcelona has an urgent need for a computer vision engineer to join on a consultant basis. The project is the development of the AR Magic Lantern (<https://emil-xr.eu/lighthouse-projects/upf-ar-magic-lantern/>), an augmented reality flashlight that tracks its location in space and projects situated virtual content onto physical surfaces around it. We have received funding from the EU to prepare the device for commercialization and we are approximately 70% done with the engineering of the CV components. However, the engineer working on this system had to leave the group due to external circumstances and we are therefore seeking a consultant to come onboard to finish the remaining work.

The device already uses a reliable visual-inertial odometry (VIO) system to track its movement and orientation using an IMU and stereo camera. However, the VIO system does not handle localization, i.e. a way for the device to know its position in a pre-scanned environment. The consultant therefore will add a reliable localization system using pose estimation from monocular or stereo images. When looking at pre-recorded features of the environment, the system should estimate its position with good accuracy so that virtual content can be convincingly registered to physical features. Some augmented reality SDKs call this an anchoring system and some call it a Visual Positioning System (VPS).

The contract would be either part-time or full-time, with a duration of 6-8 months, depending on the weekly hours. For legal reasons, some of the work would need to be performed here in our lab, but a lot of it could be done remotely as well.

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