

# INTERNSHIPS 2017

## Océ Print Logic Technologies S.A.

1 rue Jean Lemoine, 94015 Créteil Cedex, FRANCE



A CANON COMPANY

Format de REF : 2017/S1/DIA/RSAPA/N°2

**Subject:** Automatic Image Stitching from Video under Illumination Constraints

Océ PPP (A Canon Company) operates research centers in nine different countries worldwide, staffed by more than 1550 highly-skilled professionals.

Océ Print Logic Technologies (the R&D Center located in France) creates and develops, in collaboration with the other R&D centers around the world, innovative high-tech products in the fields of design, production (printers), reproduction (scanners, copiers) and document management (filing, reproduction workflow).

### Description:

Creating Image Panoramas is a functionality that, these days, is featured in commercial cameras or even smart phones. For general users, results are deemed satisfactory as long as they are pleasant for the eyes. However, in industrial environments, high-precision results are sought, as obtaining "acceptable" results from stitching a set of images could yield quality problems.

The objective of this training is to develop a software prototype for high-precision image stitching. The input data consists of a video captured with a moving camera, in an environment with uncontrolled lighting. The movement of the camera is assumed to be planar (i.e., only translation in the X and Y directions); however, in reality it might also contain small displacements in the Z direction.

Therefore, the prototype should be robust given the moving camera pattern; and should work in normal indoors illumination settings.

The internship will involve:

- An investigation on the state-of-the art of the methods related to the project (Camera Calibration, Image Stitching), with a focus on methods which yield high precision results.
- Implementation and Evaluation of the Prototype using different optical settings.
- [Optional] An investigation on how to extend the prototype into a Structure From Motion pipeline (to be started only if first two objectives are met).

The trainee will be part of the research and innovation team.

### Who are we looking for?

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#### Required Knowledge:

- Experience with Computer Vision algorithms (Image Registration knowledge is a plus)
- Programming Skills (C++ preferred, experience with Computer Vision Libraries is a plus)
- Fluent in English
- No experience with printing is necessary

**Personal skills:** Highly motivated, Analytical, Proactive

#### Internship information:

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**Duration:** 4-6 months (to start as early as possible)

**Remuneration:** 1150€ per month; and a bonus at the end of the internship which could be up to 60% of the total gross remuneration received during the internship period.

Coverage of roundtrip Airplane/train tickets; and 60% subsidy of local commuting expenses  
Partial subsidy of meals at the internal restaurant.

**Localisation:** 1 rue Jean Lemoine, 94015 Créteil  
(7min walk from « **Le Vert de Maisons** » 2<sup>nd</sup> station of RER D from **Paris Gare de Lyon**)

Are you interested? Then please send your application including your CV and Motivation Letter to the following address [ricardo.sapaico@oce.com](mailto:ricardo.sapaico@oce.com) and specify the reference **2017/S1/DIA/RSAPA/N°2**.