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INTERNSHIP 3D IMAGE RECONSTRUCTION FROM LINE SCAN IMAGES

FOR WHOM   **Master student with relevant knowledge and interest in Computer Vision,** for example Computer Science, Mathematics, Physics, Electrical Engineering, Aerospace Engineering

WHERE   **Prime Vision, Delft**

WHEN   **Starting February 2019**

Prime Vision delivers advanced Computer Vision solutions to customers all over the world. The core techniques of Prime Vision focus on automatic reading of text and image recognition. With these techniques Prime Vision is able to deliver high performance solutions for our customers in the postal and logistics market.

In the parcel market a lot of effort is dedicated to making the process of parcel delivery more efficient. One of the steps in the parcel delivery process is the so-called 'last-mile', where the parcels are transported from the sorting hub to the end customer. When arriving at the end customers front door, the person delivering the parcel needs to identify the correct parcel as quickly as possible in order to make an efficient delivery. This can be challenging as there will be multiple parcels present in the delivery van. Experiments have shown that when the delivery person can use an image, or even better a 3D representation of the parcel, the identification process can be sped up considerably.

During the sorting of a parcel line scan cameras are used to capture images of the parcel from different sides. Based on these images and the additionally available volume information it should be possible to create a 3D representation of the parcel. Prime Vision is interested in a solution that can solve this problem.

A preliminary investigation shows at least two possible ways to address this challenge, using a structure from motion approach using multiple camera views, or a deep learning approach where an algorithm is trained to convert 2D images to a 3D representation

WHAT WILL YOU BE DOING?

The goal of this internship is to develop an algorithm that is able to generate a 3D representation of a parcel, using the available 2D line scan camera images. We propose that the project will contain the following topics:

- Literature study
- Ground Truth collection.
- Algorithm implementation
    - Based on the literature study an algorithm should be chosen and implemented.
    - When time allows it is interesting to implement a secondary algorithm
- Validation experiments
    - Evaluation of the implemented algorithm
    - A comparison to the ground truth or to a secondary algorithm.
- Report

WHAT DO WE REQUIRE FROM YOU?

For this assignment we are looking for an intern with relevant knowledge and interest in Computer Vision. Preferably the intern has a working knowledge of computer programming and has a hands-on approach to developing software. For Deep Learning Prime Vision is currently using Tensorflow (www.tensorflow.org) in Python as the main test platform. Hands on experience with Tensorflow and Python is preferred.

WHAT CAN YOU EXPECT FROM US?

Our company is all about innovation in IT. We converge the knowledge from our long history and experience in deep learning and the latest Computer Vision capabilities to create a fertile ground for innovative thinkers and problem solvers.

At the R&D department, you will work with some of the best brains in the industry busy concocting new software. You will be properly supervised during your internship and be given the scope for you to get the best out of yourself. Naturally, we provide suitable work placement compensation.

INTERESTED?

Then please feel free to apply on this vacancy! For further questions don't hesitate to contact us.

Please send your job application, accompanied by a c.v. and possibly motivation, citing "Internship Positioning" to **Peggy Kosters** at **sollicitaties@primevision.com**.