

Objet: International Conference on 3D Vision 2021 : Submission (450) has been created.

Date: mercredi 28 juillet 2021 à 21:17:13 heure d'été d'Europe centrale

De: Microsoft CMT

À: TOUIL Mohamed ameziane

Hello,

The following submission has been created.

Track Name: 3DV2021

Paper ID: 450

Paper Title: Smart 3D Camera Pose Estimation for Complex Augmented Reality Environments Using Deep Learning Techniques

Abstract:

In recent years, interest in augmented reality (AR) has grown steadily for industrial applications. Today, AR is one of the pillars of Industry 4.0. One of the major problems of AR is the localisation of the display device. Indeed, to obtain an accurate real-virtual worlds registration, it is necessary to efficiently estimate the camera pose at each frame and in real-time. In this paper, we combine a deep learning solution within a geometric approach to estimate the camera poses from RGB images. We designed a Convolutional Neural Network (CNN), called 3DNet, which allows to regress 3D coordinates from a set of RGB patches. In order to extend our approach to unlearned and therefore completely unknown environments, we have implemented a transfer learning approach to regress the 3D point coordinates using a pre-trained model. We evaluated the performance of our approach on two databases: the public 7scenes database from Microsoft, and our own RGB-D database created using the Intel RealSense D435i camera. We compared the results of our approach with those of state-of-the-art. We obtained better results in both 3D points prediction and camera pose estimation.

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Primary Subject Area: ANALYSIS - Motion and tracking

Secondary Subject Areas: APPLICATIONS - Industrial

Submission Files: 3DNet_Paper_3DV.pdf (4 Mb, Wed, 28 Jul 2021 19:16:33 GMT)

Submission Questions Response:

1. Student paper
Yes
2. The author list is final.
Agreement accepted
3. TPMS
Agreement accepted

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