

IEEE Xplore[®]
Digital Library

> Institutional Sign In

IEEE

BROWSE ▾

MY SETTINGS ▾

GET HELP ▾

WHAT CAN I ACCESS?

SUBSCRIBE

Enter Search Term

Search

Basic Search

Author Search

Publication Search

Advanced Search

Other Search Options ▾

Browse Conference Publications > Mixed and Augmented Reality (... ?

KinectFusion: Real-time dense surface mapping and tracking

Full Text
Sign-In or Purchase

10
Author(s)

Newcombe, Richard A. ; Imperial College London ; Izadi, Shahram ; Hilliges, Otmar ; Molyneaux, David
more authors

Abstract	Authors	References	Cited By	Keywords	Metrics	Similar
----------	---------	------------	----------	----------	---------	---------

Download Citations

Email

Print

Request Permissions

Save to Project

Facebook

Twitter

LinkedIn

We present a system for accurate real-time mapping of complex and arbitrary indoor scenes in variable lighting conditions, using only a moving low-cost depth camera and commodity graphics hardware. We fuse all of the depth data streamed from a Kinect sensor into a single global implicit surface model of the observed scene in real-time. The current sensor pose is simultaneously obtained by tracking the live depth frame relative to the global model using a coarse-to-fine iterative closest point (ICP) algorithm, which uses all of the observed depth data available. We demonstrate the advantages of tracking against the growing full surface model compared with frame-to-frame tracking, obtaining tracking and mapping results in constant time within room sized scenes with limited drift and high accuracy. We also show both qualitative and quantitative results relating to various aspects of our tracking and mapping system. Modelling of natural scenes, in real-time with only commodity sensor and GPU hardware, promises an exciting step forward in augmented reality (AR), in particular, it allows dense surfaces to be reconstructed in real-time, with a level of detail and robustness beyond any solution yet presented using passive computer vision.

Published in:
Mixed and Augmented Reality (ISMAR), 2011 10th IEEE International Symposium on

Date of Conference:
26-29 Oct. 2011

Page(s):
127 - 136

E-ISBN :
978-1-4577-2184-7

Print ISBN:
978-1-4577-2183-0

Conference Location :
Basel

DOI:
10.1109/ISMAR.2011.6092378

Publisher:
IEEE

[Personal Sign In](#) | [Create Account](#)

IEEE Account	Purchase Details	Profile Information	Need Help?
» Change Username/Password	» Payment Options	» Communications Preferences	» US & Canada: +1 800 678 4333
» Update Address	» Order History	» Profession and Education	» Worldwide: +1 732 981 0060
	» Access Purchased Documents	» Technical Interests	» Contact & Support

About IEEE Xplore | Contact Us | Help | Terms of Use | Nondiscrimination Policy | Sitemap | Privacy & Opting Out of Cookies

A not-for-profit organization, IEEE is the world's largest professional association for the advancement of technology.
© Copyright 2015 IEEE - All rights reserved. Use of this web site signifies your agreement to the terms and conditions.

IEEE