# ElasticFusion: Dense SLAM Without A Pose Graph

# Fused Predicted Tracking

### Scene representation

##### An unordered list of surfels

13-3DV- Real-time 3D Reconstruction in Dynamic Scenes using Point-based Fusion

A position

Normal

Color

Weight

Radius

Initialization timestamp

Last updated timestamp

### Comparison with Keller

##### Reference

13-3DV- Real-time 3D Reconstruction in Dynamic Scenes using Point-based Fusion

##### Same rules

Perform surfel initializsation and depth map fusion

Average scheme

##### Differences when using the map for pose estimation

Instead of only predicting, a depth map, we additionally predict a full colour splatted rendering of the model surfels to perform photometric frame-to-model tracking

Define a time window threshold which divides into surfels which are active and inactive

Only surfels which are marked as active model surfels are used for camera pose estimation and depth map fusion

Inactive when the time since that surfel was last is greater than

##### Image definition

Image space domain

Depth map of depth pixel

Color map of colour pixel

##### Normal map using central difference

##### 3D back-projection of a point

K is the camera intrinsic matrix

is the homogeneous from of

##### Perspective projection of a 3D

# Deformation Graph

# Local Loop Closure

# Global Loop Closure