Deep Depth From Focus

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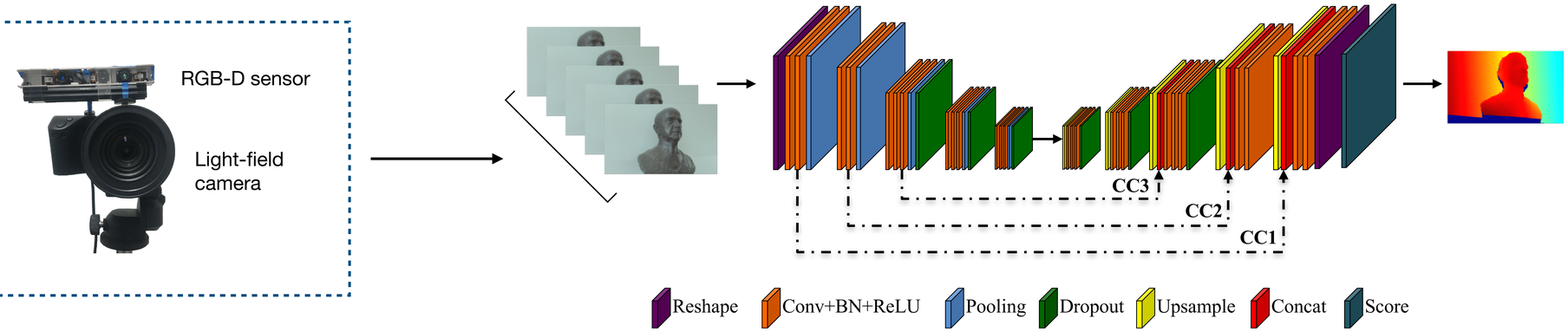


SNEAK PEEK

Introduction

- Depth can be recovered from a focal stack
- Pixel sharpness determines where the pixel is focused in the stack, and hence the depth of pixel

Contributions

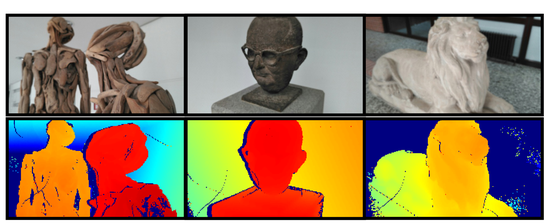
- We propose an end-to-end trained network for ***depth from focus***
- We introduce a large indoor dataset with 720 light-fields and co-registered ground truth depth maps
- We compare several state-of-the-art methods for DFF and analyse several network variations

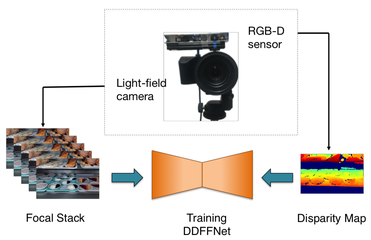
DDFF 12-Scene Dataset

- 720 light-fields with groundtruth
- 9x9 undistorted sub-apertures
- 383x552 image resolution
- Indoor, real-world challenges

Mobile Depth From Focus Dataset

- 202 focal stacks captured with an Android smartphone
- Registered depth maps captured by the smartphone
- Publicly available





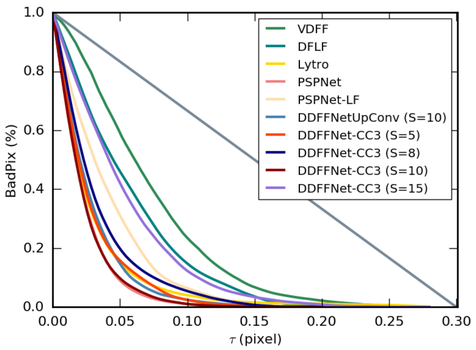
mobile DFF

DDFF 12-Scene

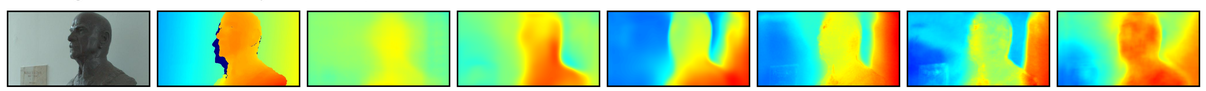
Experiments

- Quantitative results on the **DDFF 12-Scene** benchmark

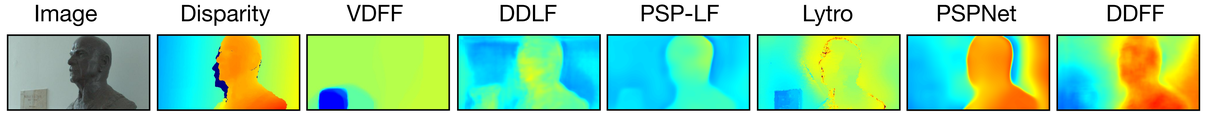
	MSE	RMS	Bumpness
PSPNet	9.4 e^{-4}	0.03	0.55
Lytro	2.1 e^{-4}	0.04	1.02
PSP-LF	2.7 e^{-4}	0.05	0.54
DFLF	4.8 e^{-4}	0.06	0.65
VDFF	7.3 e^{-4}	0.08	0.79
DDFF-CC3	9.7 e^{-4}	0.03	0.59



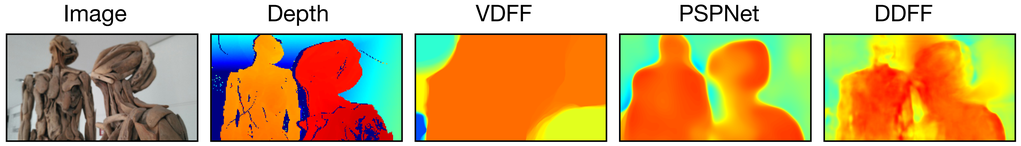
- Several variations of the encoder-decoder architecture



- DDFF vs. state-of-the-art DFF and depth from light-field methods



- Results on the ***mDFF*** dataset



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