Image Matching: Local Features and Beyond

CVPR 2019 Workshop: June 16 (morning)

Vassileios Balntas (Scape), Vincent Lepetit (U. Bordeaux), Johannes Schönberger (Microsoft), Eduard Trulls (Google), Kwang Moo Yi (U. Victoria)

Organizers

Vassileios Balntas
Scape Technologies

Vincent Lepetit
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Johannes Schönberger
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Eduard Trulls
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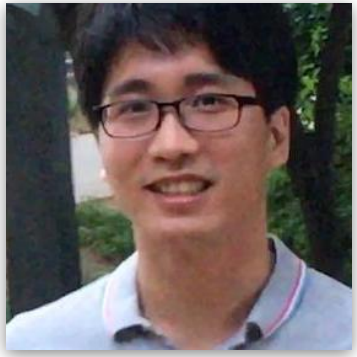


Kwang Moo Yi
U. Victoria

https://image-matching-workshop.github.io/

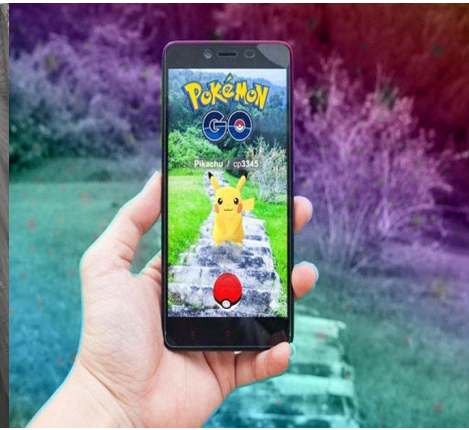
Program

8:45 - 9:00	**Welcome**
9:00 - 9:30	**Amir Zamir (Stanford/UC Berkeley)** *Collection of Large-scale Densely-labeled 3D Data from the Real World Without a Single Click*
9:30 - 10:15	**Jiri Matas (CTU Prague)** *On the Art of Establishing Correspondence*
10:15 - 11:00	**Coffee Break + Poster Session**
11:15 - 12:00	**Torsten Sattler (Chalmers U. of Technology, Gothenburg)** *In Defense of Local Features for Visual Localization*
12:00 - 12:15	**IMW2019 Challenge**
12:15 - 12:30	**Zixin Luo (HKUST)** Winner of the Phototourism Challenge
12:30 - 12:45	**Challenge results and awards**

Focal point: image matching

- Matching rigid scenes across baselines, time, weather, etc.
- Underlying technologies common to key CV/ML problems: mapping, re-localization, SLAM, augmented & virtual reality, autonomous navigation, robotics, etc.



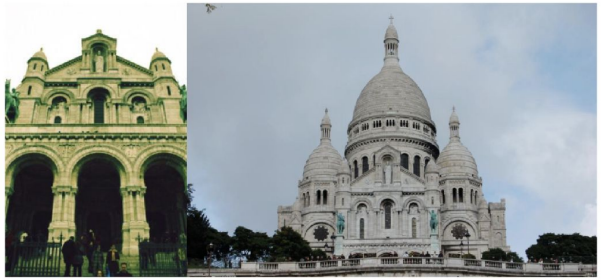



Google Maps AR

Scape Localisation Engine

SOSNet Oral+Poster

A classical problem, but far from solved… "IRL"



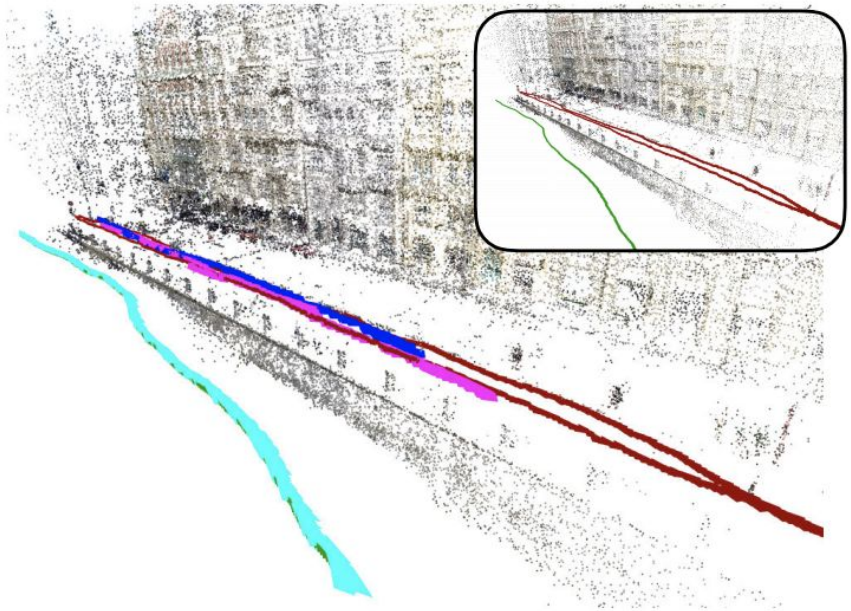
Large baselines

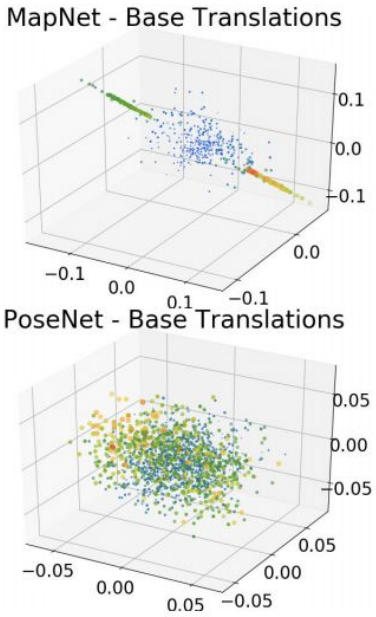
Occlusions

Environmental changes

Local vs. World-Scale

Structured methods remain king





More at 11:15!

Understanding the Limitations of CNN-based Absolute Camera Pose Regression. Sattler et al., CVPR 2019.

The last bastion?

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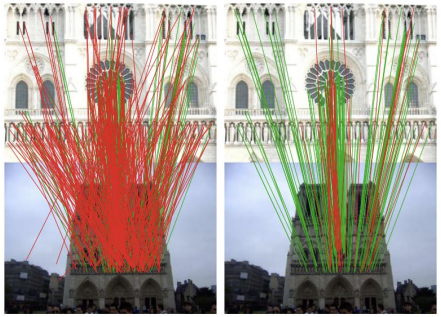
To be clear...

- We use machine learning a lot
  - But not end-to-end

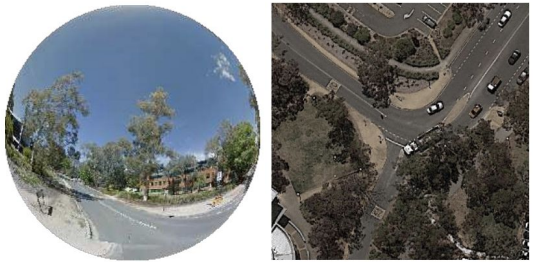
- We don't know if individual components generalize well
  - Does performance translate down-stream?
  - Are we focusing on the right problems?

Topics (not limited to)

Learning feature extractors
D2-Net, CVPR'19



Learning feature matchers
Learning Correspondences, CVPR'18



Novel modalities (e.g. pano vs aerial)
(Cross-view geo-localization, CVPR'19)

Adversarial methods
(CycleGAN, ICCV'17)

Phototourism Challenge

Eduard Trulls (Google)
Kwang Moo Yi (U. Victoria)
Sri Raghu Malireddi (U. Victoria)
Yuhe Jin (U. Victoria)

SILDa Challenge

Vassileios Balntas (Scape)

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