Global-Scale Localization in Outdoor Environments

Outro

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AR Localization Continuum

- Outdoor Localization from 2.5D Maps (2015)
- Visual Real-time SLAM (2014)
- Outdoor 6DOF Tracking (2012)

Less Environment and Model Data Required

More Lightweight, More Robust, More Mobile

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Outdoor MAR Workshop 2011 – State back then...

- Challenges for Outdoor AR:
  - Limited Connectivity
  - Limited Processing Power
  - Limited Battery Power
  - Limiting Concepts for HCI
  - Limiting Computer Vision Algorithms
... and today.

- Limited Connectivity? – Gone, at least for small chunks of data...
- Limited Processing Power? – Gone, or at least multiplied by factor 20 since 2009
- Limited Battery? – Not really gone, still an issue for continuous use of algorithms
- HCI Concepts Limiting? – Still controlling through swiping, gestures; other controlling concepts missing
So why don’t we have outdoor AR widespread yet?

- Because ...
  - it means we need to solve many difficult problems at once!
  - we would need models of the world, like 2D and 3D data, with high accuracy.
  - we would also need all the image data that Google or Microsoft have, but don’t make available for public use;
Why don’t we have outdoor AR yet?

- Because …
  - we would need robust solutions to convince customers, and we don’t have them yet for a wide range of scenarios.
  - we would need AR content to show, which is not there and we don’t even have concepts to create content at a large scale right now.
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Thanks for listening!