Augmented Reality & Video Service Emerging Technologies

SIFT SURF FAST BRIEF ORB BRISK

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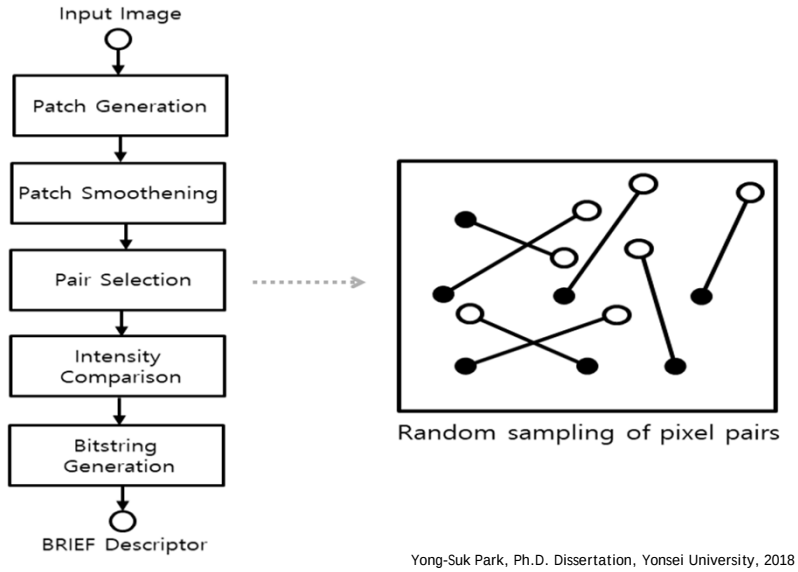
❖ BRIEF: Binary Robust Independent Elementary Features

- Popular binary feature descriptor technology used in the robotic applications
- Randomly generated distribution pattern (patch form of 31×31 pixels) is used
  - Distribution pattern consists of 256 pixel point-pairs
  - Descriptors are generated from the binary comparison of the point-pairs

BRIEF Feature Description Process



Yong-Suk Park, Ph.D. Dissertation, Yonsei University, 2018

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❖ Binary Descriptor parts

- Sampling pattern
  - Sampling pattern is used to sample points in the region around the descriptor
- Orientation compensation
  - Keypoint orientation is determined by the size of the orientation compensation that is needed to compensate for rotational changes

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❖ Binary Descriptor parts

- Sampling pairs
  - Final descriptor is made by pairs based on comparing sampling pairs
  - BRIEF does not have an intricate sampling pattern or mechanism for orientation compensation
  - BRIEF compares random point-pairs within the local region

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❖ **Noise Sensitivity**

- BRIEF descriptors use information based on single pixel locations, which makes it sensitive to noise
- Gaussian filters are used to relieve the noise sensitivity

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