MINJUNG KIM

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RESEARCH INTERESTS

My research focuses on **Visual Localization** and **3D Dense Captioning** for enhanced 3D scene understanding, with particular interest in: (i) understanding complex scenes from images and point clouds, (ii) effectively handling multi-modalities, and (iii) achieving a comprehensive understanding of 3D scenes through natural language.

EDUCATION

Seoul National University   Seoul, Korea
Integrated M.S./Ph.D. Student in Computer Science and Engineering; **(GPA: 4.03/4.3)**   *Mar. 2018 – Current*
Vision and Learning lab, advised by Prof. Gunhee Kim.

Sogang University   Seoul, Korea
B.S. in Computer Science and Engineering; **(GPA: 3.58/4.3), Magna Cum Laude**   *Mar. 2014 – Feb. 2018*
Advised by Prof. Hyukjun Lee.

PUBLICATIONS

Bi-directional Contextual Attention for 3D Dense Captioning   ECCV 2024
Minjung Kim, Hyung Suk Lim, Soonyoung Lee, Bumsoo Kim*, Gunhee Kim*   *Oral presentation*

Rethinking the Role of Queries in 3D Dense Captioning   KCC 2024
Minjung Kim, Gunhee Kim

See It All: Contextualized Late Aggregation for 3D Dense Captioning   ACL 2024 Findings
Minjung Kim, Hyung Suk Lim, Seung Hwan Kim, Soonyoung Lee, Bumsoo Kim*, Gunhee Kim*

EP2P-Loc: End-to-End 3D Point to 2D Pixel Localization for Large-Scale Visual Localization   ICCV 2023
Minjung Kim, Junseo Koo, Gunhee Kim

Indoor/Outdoor Transition Recognition Based on Door Detection   UR 2022
Seohyun Jeon, Minjung Kim, Seunghwan Park, Jaeyoung Lee

Drop-Bottleneck: Learning Discrete Compressed Representation for Noise-Robust Exploration   ICLR 2021
Jaekyeom Kim, Minjung Kim, Dongyeon Woo, Gunhee Kim

Logo Detection and Recognition Algorithm using YOLO-v3 Model   CICS 2020
Minjung Kim, Sungen Kim, Gunhee Kim

Memorization Precedes Generation: Learning Unsupervised GANs with Memory Networks   ICLR 2018
Youngjin Kim, Minjung Kim, Gunhee Kim

Machine Learning for Determining Duplicate Question   KSC 2017
Minjung Kim, Yeongjoon Park, Hyungsuk Lim, Jihoon Yang

Sketch based Face Image Generation with Text Mapping   KSC 2017
Minjung Kim, Hyungsuk Lim, Yeongjoon Park, Yeseul Joo, MyoungWan Koo

PROJECTS

DeepGuider | *GitHub*   *Apr. 2019 – May. 2023*

- The DeepGuider Project is a national government-funded research project focused on developing a navigation guidance system that enables robots to navigate urban environments without the need for pre-mapping.
- I contributed by identifying clues to help locate autonomous robots, detecting and recognizing points of interest (POIs) in scene images, including text, landmarks, and doors for indoor-outdoor transitions, while also developing robust training methods to adapt to environmental changes.

PRIDE: 3D Place Recognition In Dynamic Environment | *GitHub*   *Mar. 2022 – Apr. 2023*

- This work proposes a new dataset called PRIDE, which includes dynamic objects such as cars and pedestrians, for 3D place recognition in dynamic environments that are more realistic and challenging than current benchmarks.
- The proposed PRIDE-Net architecture with a new loss function focuses on extracting discriminative global descriptors and capturing global context using spatial information, while being robust to dynamic environments.
- Experiments on the PRIDE dataset and existing benchmarks show that our proposed method outperforms previous methods and that each proposed module effectively improves performance.
- The code will be released after acceptance.

FCAT: Fully Convolutional Network with Self-Attention for Point Cloud based Place Recognition | *GitHub*   *Dec. 2020 – Feb. 2022*

- We construct a novel network named FCAT (Fully Convolutional network with a self-ATtention unit) that can generate a discriminative and context-aware global descriptor for place recognition from the 3D point cloud.
- It features with a novel sparse fully convolutional network architecture with sparse tensors for extracting informative local geometric features computed in a single pass. It also involves a self-attention module for 3D point cloud to encode local context information between local descriptors.

Bayesian Deep Learning course | *Lecture*   *Feb. 2018 – Jul. 2018*

- To understand deep learning papers, we explain the basic concepts of probability and Bayesian, and introduce papers related to Bayesian neural networks.
- This lecture can be taken through *edwith* of Naver Connect.

Sketch based Face Image Generation with Text Mapping | *GitHub*   *Sep. 2017 – Feb. 2018*

- A typical sketch might have been uncomfortable when a person or program was used to map a person's features in detail. This process is limited not only because it is very complex and requires technicians, but also because it creates a feeling of incompatibility with real people.
- This program, named Metamon, makes a picture of a person's face by entering the image of the border sketch of the person's face and the text information that shows the characteristics of the face.

Arduino & Raspberry Pi & Internet of Things (IoT) Tutorial | *Project page*   *Dec. 2016 – Mar. 2017*

- I create tutorial pages with Youtube videos and code for beginners in Arduino kit and Raspberry Pi development.
- I also introduce the concept of the Internet of Things (IoT) and work on a mini-project using *ThingSpeak*™.

Sogang Navigation and Introduction (SNI) | *Github*   *Mar. 2015 – Jul. 2015*

- We develop a navigation system that introduces the internal facilities of each building and displays the shortest route and time from building to building using the Floyd-Washall algorithm.
- To build data for the development, we measured the time taken by walking directly on each path.

EXPERIENCES

Vision and Multimodal Lab   LG AI Research
Research Intern   *Jun. 2023 – May. 2024*

KDB-SNU AI course   Seoul National University
Teaching Assistant   *Apr. 2023*

2022-3 SK hynix ML Engineer course   Seoul National University
Teaching Assistant   *Nov. 2022 – Dec. 2022*

KDB-SNU AI course   Seoul National University
Teaching Assistant   *Apr. 2022 – May. 2022*

LG AI core human resource training course   Seoul National University
Teaching Assistant   *Feb. 2022*

loT · Artificial Intelligence · Big Data (IAB) course   Seoul National University
Teaching Assistant   *Sep. 2018 – Jun. 2019*

Bayesian Deep Learning course   Naver Connect
Publisher   *Feb. 2018 – Jul. 2018*

Vision and Learning Laboratory   Seoul National University
Research Intern   *Jul. 2017 – Feb. 2018*

Biointelligence Laboratory   Seoul National University
Research Intern   *Sep. 2016 – Feb. 2017*

Arduino & Raspberry Pi Kit Developer   MakeWith (Startup)
Development Intern   *Dec. 2016 – Jan. 2017*

AWARDS & SCHOLARSHIPS

YoulChon AI Star   YoulChon
Scholarship   *Sep. 2024*

Animal Datathon Korea   Animal Tech Korea
Predicting joint coordinates of a cow for pose estimation; **2nd place**   *Jul. 2021*

Samsung Humantech Paper Award   Samsung Electronics
Signal Processing section; **Silver prize**   *Feb. 2021*

KSC 2017 Paper Award   Korean Institute of Information Scientists and Engineers
The undergraduate/junior thesis contest award   *Feb. 2018*

Magna Cum Laude Honor   Sogang University
Academic Honors   *Feb. 2018*

Academic Excellence Scholarship   Sogang University
Academic Honors   *Jul. 2017 – Feb. 2018*

Windows 10 IoT Core & Microsoft Azure for Microsoft IoT Solution Competition   Microsoft
Implementing Internet of Things (IoT) projects with Windows 10 IoT Core and Microsoft Azure; **10th place**   *Apr. 2017*

SKILLS

Programming: Python, C, C++
Frameworks: Pytorch, TensorFlow/Keras
Tools: Git, VSCode, Vim, Docker, Slurm
Others: Arduino, Rapsberry Pi

PROFESSIONAL ACTIVITES

Reviewer of International Conferences

- European Conference on Computer Vision (ECCV) 2024
- IEEE/CVF International Conference on Computer Vision (ICCV) 2023
- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2023
- Asian Conference on Computer Vision (ACCV) 2022
- International Conference on Learning Representations (ICLR) 2022, 2023
- Neural Information Processing Systems (NeurIPS) 2021, 2022, 2023, 2024

Reviewer of International Journals

- International Journal of Computer Vision (IJCV) 2024

Technical Coaching

- 2022-3 SK hynix ML Engineer Technical Coaching