LetsGo GarageWorld Database

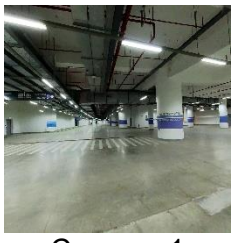
I. Introduction

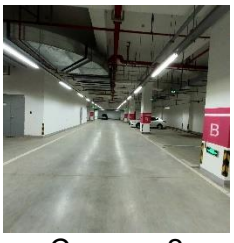
GarageWorld database is the first of its kind aimed at largescale. Eight garages are collected with the self-designed **handhold device, Polar**, including six underground garages with various types of inside geometries, one indoor garage with multi-floors at Shopping Mall One, and one outdoor surface parking at Shopping Mall Two. These garages comprise various challenging structures, such as sloped surfaces with distorted lines, internal circular or spiral paths, vehicle elevators.

(a) Scene (b) Device (c) Point Cloud (d) Fisheye Image

GarageWorld database consists of the captured fisheye images and LiDAR point clouds. To make it more convenient for researchers, we provide data in a format similar to COLMAP, processed according to the methods described in the paper, with fisheye images converted to pinhole images and partitioned accordingly.

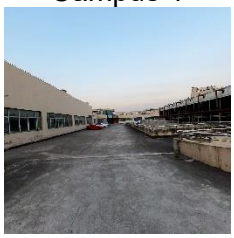

Arts Center


Campus 1


Campus 2


Office Building


Shopping Mall 1


Shopping Mall 2


Shopping Mall 3


Subway Garage

II. BibTex

Please cite our work if you use data from this site.

```
@article{cui2024letsgo,
  title={LetsGo: Large-Scale Garage Modeling and Rendering via LiDAR-Assisted Gaussian Primitives},
  author={Cui, Jiadi and Cao, Junming and Zhao, Fuqiang and He, Zhipeng and Chen, Yifan and Zhong, Yuhui and Xu, Lan and Shi, Yujiao and Yu, Jingyi},
  journal={arXiv preprint arXiv:2404.09748},
  year={2024}
}
```

III. Database Application

To download the data, please read and fill in the form in Page 4, and send back to: hello@neudim.com.

Once your application is approved, you will receive the link with the access.

IV. Database Structure

As mentioned before, we provide processed data in COLMAP format, as:

```
--<Dataset Name>
  --group_0
    --images
      --<….jpg>
    --sparse
      --0
        --camera.txt
        --images.txt
        --points3D.ply
  --group_1
  …
```

It should be noted that, we didn't have ***points2D*** in COLMAP. Instead, we fill in that line with "***No content***", e.g.:

```
1. 1 0.6230793195676305 0.6619598513055862 0.2933752131583773 -0.29582478106288124
54.299169309601844 -6.22926825914944 -12.565413973385079 1 1703925327.152333_F.jpg
2.  No Content
```

Therefore, the data loader code should be changed into:

```
 1. def read_extrinsics_text(path):
 2.     """
 3.     Taken and modified from
https://github.com/colmap/colmap/blob/dev/scripts/python/read_write_model.py
 4.     """
 5.     images = {}
 6.     with open(path, "r") as fid:
 7.         while True:
 8.             line = fid.readline()
 9.             if not line:
10.                 break
11.             line = line.strip()
12.             if len(line) > 0 and line[0] != "#":
13.                 elems = line.split()
14.                 image_id = int(elems[0])
15.                 qvec = np.array(tuple(map(float, elems[1:5])))
16.                 tvec = np.array(tuple(map(float, elems[5:8])))
17.                 camera_id = int(elems[8])
18.                 image_name = elems[9]
19.                 try:
20.                     elems = fid.readline().split()
21.                     xys = np.column_stack([tuple(map(float, elems[0::3])),
22.                                            tuple(map(float, elems[1::3]))])
23.                     point3D_ids = np.array(tuple(map(int, elems[2::3])))
24.                 except:
25.                     xys = None
26.                     point3D_ids = None
27.                 images[image_id] = Image(
28.                     id=image_id, qvec=qvec, tvec=tvec,
29.                     camera_id=camera_id, name=image_name,
30.                     xys=xys, point3D_ids=point3D_ids)
31.     return images
```

V. Capture Device

If you are interested in the capture device Polar, please contact:
business@stereye.com

LetsGo GarageWorld Database Terms of Use

Before we are able to offer you access to the database, please agree to the following terms of use.

After approval, you (the "Researcher") receive permission to use the GarageWorld database (the "Database") at ShanghaiTech University. In exchange for being able to join the GarageWorld community and receive such permission, Researcher hereby agrees to the following terms and conditions:

1. Researcher shall use the Database only for non-commercial research and educational purposes. Commercial use is strictly prohibited.
2. ShanghaiTech University makes no representations or warranties regarding the Database, including but not limited to warranties of non-infringement or fitness for a particular purpose.
3. Researcher accepts full responsibility for his or her use of the Database and shall defend and indemnify ShanghaiTech University, including their employees, Trustees, officers and agents, against any and all claims arising from Researcher's use of the Database, including but not limited to Researcher's use of any copies of copyrighted 3D models that he or she may create from the Database.
4. Researcher may only provide research associates and colleagues with the data, after the receiving entity has also agreed to and signed these terms and conditions. Sharing the data otherwise is strictly prohibited.
5. Following GDPR, Researcher must ensure that they can delete all person-specific data of a person upon request.
6. ShanghaiTech Univeristy reserves the right to terminate Researcher's access to the Database or parts thereof at any time.
7. If Researcher is employed by a for-profit, commercial entity, Researcher's employer shall also be bound by these terms and conditions, and Researcher hereby represents that he or she is fully authorized to enter into this agreement on behalf of such employer.
8. Laws of the People's Republic of China shall apply to all disputes under this agreement.

Requester's name: _____

Requester's email: _____
(This email will be used to grant access to the shared folder on Google Drive. Please make sure this email can access Google Drive)

PI/Supervisor's[1] name: _____

PI/Supervisor's email: _____

Affiliation: _____

Requester's signature: _____ Place, Date: _____

PI/Supervisor's signature: _____ Place, Date: _____

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1. Principal investigator (PI) is the holder of an independent grant and the lead researcher for the grant project. For doctoral candidates and postdoctoral fellows, this is usually the supervising professor or research group leader. For researchers in for-profit commercial entities, the supervisor is a person who can legally represent the Researcher. For independent applicants, fill in the same details as the Requester here.