

# Wild-Places: A Large-Scale Dataset for Lidar Place Recognition in Unstructured Natural Environments-Supplementary Material

Joshua Knights<sup>\*,1,2</sup>, Kavisha Vidanapathirana<sup>\*,1,2</sup>, Milad Ramezani<sup>1</sup>,  
Sridha Sridharan<sup>2</sup>, Clinton Fookes<sup>2</sup>, Peyman Moghadam<sup>1,2</sup>

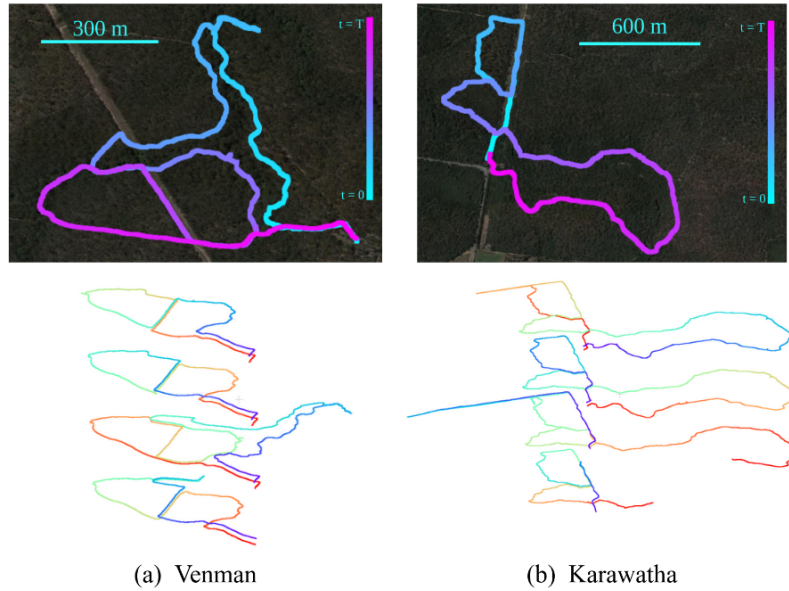


Figure 1: Visualized trajectories for the Venman and Karawatha environments

This supplement contains an outline of the dataset structure, as well as download instructions for both the dataset and associated code. Our dataset and code is available at <https://csiro-robotics.github.io/Wild-Places>

---

<sup>\*</sup>Equal Contribution

<sup>1</sup> Joshua Knights, Kavisha Vidanapathirana, Peyman Moghadam and Milad Ramezani are with the Robotics and Autonomous Systems, DATA61, CSIRO, Brisbane, QLD 4069, Australia. E-mails: *firstname.lastname@data61.csiro.au*

<sup>2</sup> Joshua Knights, Kavisha Vidanapathirana, Peyman Moghadam, Sridha Sridharan, Clinton Fookes are with the research program in Signal Processing, Artificial Intelligence and Vision Technologies (SAIVT) at the Queensland University of Technology (QUT), Brisbane, Australia. E-mails: *joshua.knights, peyman.moghadam, s.sridharan, c.fookes@qut.edu.au*

# 1 Dataset Contents

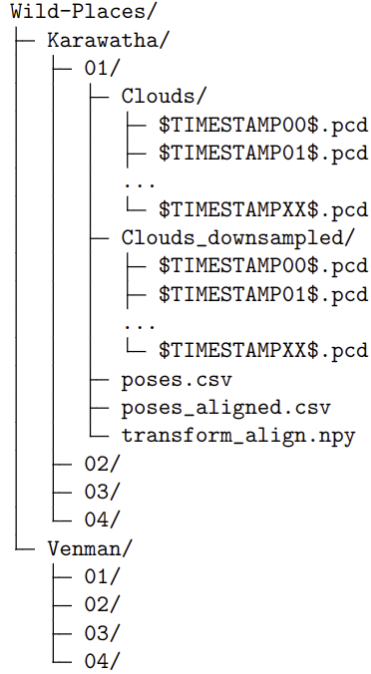


Figure 2: Wild-Places Dataset File Structure

The Wild-Places contains eight lidar sequences taken on two environments - Karawatha and Venman - with the dataset's file structure organised as shown in Figure 2. Table 1 outlines the information provided for each sequence, with additional information provided as needed in subsections below.

Clouds	Full-Resolution submaps for the sequence, named by their timestamp
Clouds_downsampled	Same as above, but downsampled with voxel size of 0.8m
poses.csv	The raw 6DoF pose associated with each submap
poses_aligned.csv	Same as above, but with the poses aligned so that each sequence on the same environment shares a frame of reference
transform_align.npy	The transformation used to align the point clouds of this sequence with the other sequences in this environment

Table 1: Description of Dataset Contents

## 1.1 Submaps

The Submaps for each trajectory are saved in the `.pcd` pointcloud format, which can be loaded using the [Open3D](#) or [Pyntcloud](#) libraries. The individual sub-maps are named after their corresponding

timestamps, which can be used to find their 6DoF using the .csv files included alongside each sequence as well.

The *Clouds* folder contains the full resolution submaps for each sequence. The *Clouds\_downsampled* folder contains the same submaps but downsampled using a voxel size of 0.8m, for memory-intensive training methods or for users who do not wish to download the full-resolution dataset. Please refer to the [Wild-Places paper](#) for more information about our sub-map generation.

## 1.2 Pose Files

`poses.csv` is a CSV file that contains the raw 6DoF poses of each submap in quaternion format, obtained from the output of our SLAM solution. `poses_aligned.csv` contains the 6DoF poses of each submap after alignment using the transformation in `transform_align.npy`. To associate a submap with its given pose, use the timestamp in the filename of the submap to find its corresponding line in the .csv. Please refer to the [dataset paper](#) for more information about our SLAM solution and alignment methodology.

## 2 Downloading Wild-Places via Terminal

This section provides a step-by-step guide to downloading the Wild-Places Dataset

1. Navigate to the "Files" Tab in the Data Access Portal (DAP) and select the files you wish to download, as shown in the figure below.

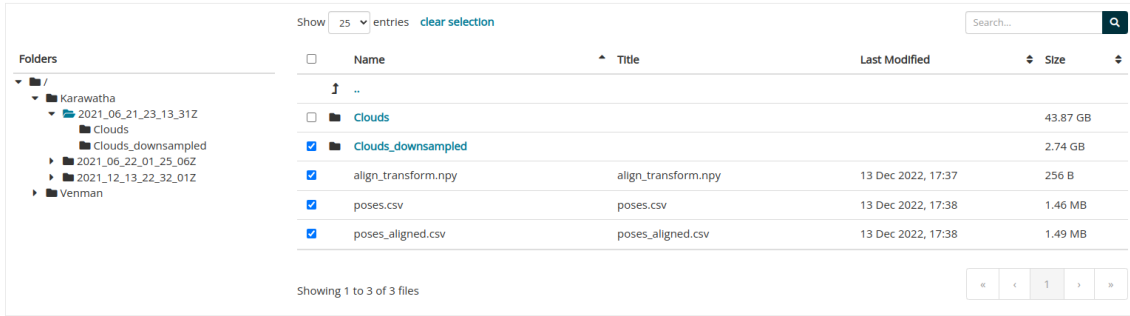


Figure 3: Example of File Selection for Download

2. Select the "Download" button in the top right of the tab, choose "Download files via WebADV" from the drop-down menu and provide your e-mail address. Within 24 hours, you should receive an email containing a username, password and download URL similar to Figure 2. **Note:** If you would like to split your download of the dataset into multiple jobs it is possible to request multiple download URLs, by selecting only a sub-set of the dataset each time you perform this step.
3. In a terminal, navigate to the directory where you would like to save the files and run the following command:

```
wget -r -c --user $USER --ask-password $URL
```

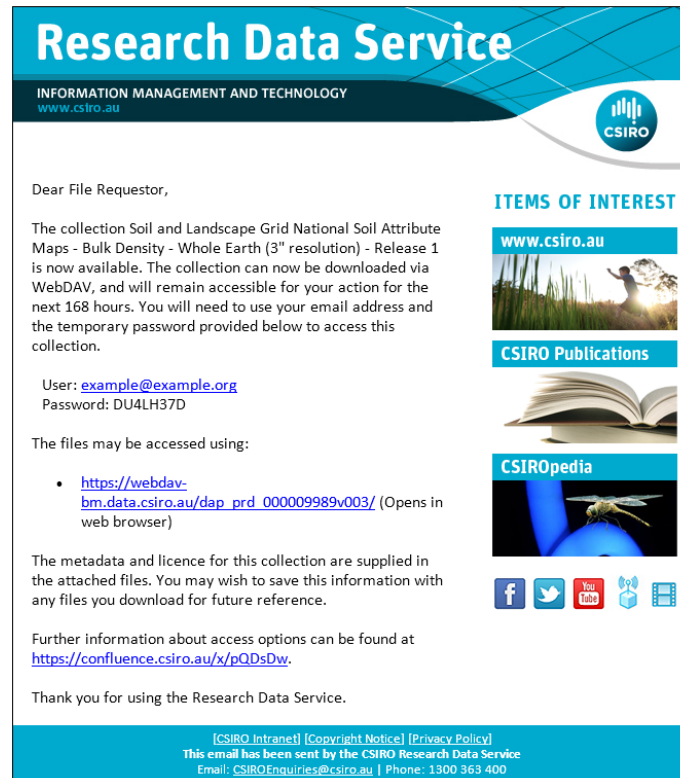


Figure 4: Example URL download link

Where \$USER and \$URL are the username and download URL contained in the email. You will then be prompted for a password, to which you should provide the password included in the email as well.