Unmanned Aerial Vehicle (UAV) technology has led to a proliferation of affordable vehicles for hobbyist and low-end commercial use. Depth maps are critical for guidance and collision avoidance.

Common sensors for depth: LiDAR / RADAR

Depth Sensors = $\text{ LiDAR / RADAR }$ Visual Cameras = $\text{ LiDAR / RADAR }$

Task: extract depth maps from single images

Real time images from a UAV should inexpensively and reliably be translated into depth maps.

Datasets

Microsoft Airsim\(^1\): a sophisticated UAV simulation environment

- Made to generate UAV images for deep learning
- Gathered raw images and depth images from a simulated neighborhood environment
- Collected 1,963 pairs of images

Divided the data as follows:

<table>
<thead>
<tr>
<th>Function</th>
<th>Data %</th>
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<tbody>
<tr>
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<td>70</td>
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<tr>
<td>Validate</td>
<td>20</td>
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<td>Test</td>
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Acknowledgments

Kyle, John, and Rachael would like to thank Shital Shah for his help with Airsim, Mykel Kochenderfer for his continuous support and enthusiasm about our project, and the CS231N course staff!

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References