

OBTAINING 3D INFORMATION FROM 2D IMAGES EFFICIENTLY USING FEATURE EXTRACTION AND LASER DOT PROJECTION

PRATHAM GANDHI AND SAMUEL SCHUUR

Abstract. A system to extract 3D information about a space was created that could be trained simply in a matter of minutes. The system, nicknamed "Constellation", was designed to be implemented in situations requiring rapidly updating computations and environmental awareness, to run on relatively inexpensive hardware, and to perform its tasks with limited human intervention. To achieve this, Constellation uses a combination of hardware and software components, focused around a set of artificial neural networks to extract features and a physical grid of points refracted from a single laser. A Python 3.6 implementation of the system was tested on two machines in a variety of environments, and produced an average of x times faster environment generation as other comparable algorithms or approaches to similar problems.

INTRODUCTION

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

1. RESULTS

1.1. FIRST RESULTS

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

...