# 3D Indoor Mapping using ROS and Microsoft Kinect sensor

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*Abstract*—**This project deals with the exploring the ROS framework for development of a robotic system with various sensors and actuators in order to understand the underlying concepts and to create a robot/quadcoptor capable of forming a 3D map of a given environment using a depth camera (Microsoft Kinect).**

*Index Terms*—**ROS, Robot Operating System, 3D-Mapping, Microsoft kinect sensor**

## I. INTRODUCTION

THE The Robot Operating System (ROS) is a flexible framework for developing software with tools, libraries and conventions that facilitate the creation of complex robot behavior on a wide variety of robotic platforms.

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## II. ROBOT OPERATING SYSTEM

ROS is great

## III. MICROSOFT KINECT

Microsoft Kinect is a RGB-D camera. It consists of a normal RGB camera along with a Depth camera. It works by...

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## IV. RTAB-MAP

RTAB-Map (Real-Time Appearance-Based Mapping) is a RGB-D Graph-Based SLAM approach based on an incremental appearance-based loop closure detector. The loop closure detector uses a bag-of-words approach to determinate how likely a new image comes from a previous location or a new location. When a loop closure hypothesis is accepted, a new constraint is added to the maps graph, then a graph optimizer minimizes the errors in the map. A memory management approach is used to limit the number of locations used for loop closure detection and graph optimization, so that real-time constraints on large-scale environnements are always respected. RTAB-Map can be used alone with a hand-held Kinect or stereo camera for 6DoF RGB-D mapping, or on a robot equipped with a laser rangefinder for 3DoF mapping.

## V. CONCLUSION

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## APPENDIX A
### PROOF OF THE FIRST ZONKLAR EQUATION

Appendix one text goes here.

## APPENDIX B

Appendix two text goes here.

## ACKNOWLEDGMENT

The authors would like to thank...

## REFERENCES

[1] H. Kopka and P. W. Daly, *A Guide to LaTeX*, 3rd ed. Harlow, England: Addison-Wesley, 1999.

**Michael Shell** Biography text here.

**John Doe** Biography text here.

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