

DEVELOPMENT OF PAVEMENT DEFORMATION MONITORING BASED SENSOR FUSION

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ABSTRACT

Estimating the location of the deformation parts is an important factor for maintaining the road safety. The purpose of the present study is to develop Asphalt Pavement Deformation Monitoring System (APDMS). The APDMS automatically detects the deformation of asphalt pavement using computer vision, laser range finder, and inertial measurement sensor. Finally, these detected informations with respect to some defects are mapped on a map using GPS information.

1. INTRODUCTION

In maintenance and inspection of pavement, an effective utilization of image processing is required[1]. We propose a new method of monitoring pavement deformation which is expressed the damage under the road.

2. APDMS ALGORITHM

Fig.1 indicates system configuration diagram of APDMS. This system obtains input images of an asphalt pavement by using infrared camera because of detection of road damages. At the same time, some cavity candidates are estimated by analyzing information taken from laser range finder and inertial measurement sensor. Finally, pavement

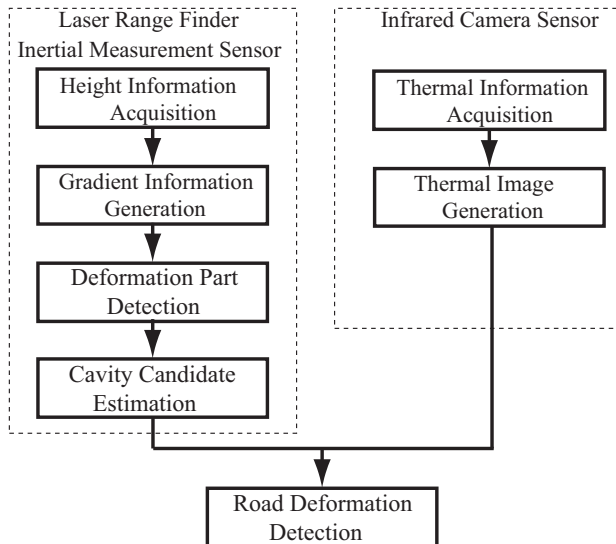


Figure 1: System configuration diagram of method for monitoring road deformation.

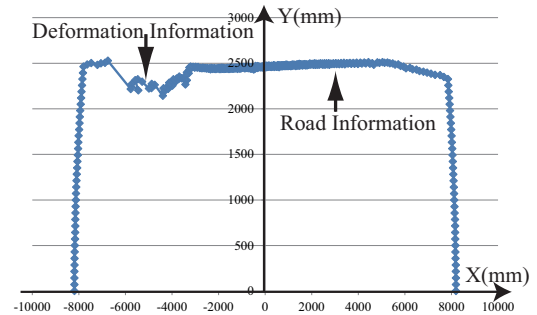


Figure 2: Distance measured by using laser range finder.

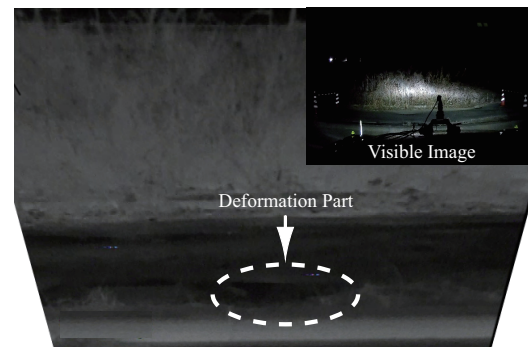


Figure 3: Result of detected derormation part on the road.

deformation is detected by integrating the set of the data.

3. EXPERIMENTAL RESULT

Fig.2 shows the distance from experimental vehicle to pavement. Fig.3 shows the detected deformation part on the road.

4. CONCLUSION

This paper was described about the development of the method for monitoring pavement deformation. Further studies in order to improve an accuracy are needed.

5. REFERENCES

- [1] H. Murakami: "Application of Image Processing to the Maintenance and Inspection of Road Pavement," The Journal of The Institute of Electrical Engineers of Japan, Vol.136, No.5, pp. 279–284 (2016).