



AN EFFECTIVE REALTIME UPDATING OF ROAD FACILITY DB USING DIGITAL CAMERA WITH A BUILT-IN BLUETOOTH AND DGPS

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INTRODUCTION

In this study, construction of complicated and various road facility DB were conducted using digital camera with a built-in Bluetooth and DGPS, which obtain location and image of road facility. Obtained location information and digital image will be able to utilize effective realtime update and management of road facility such as creating, repairing using digital camera and DGPS.

DATA ACQUISITION

Positions about facilities were decided by DGPS and images about facilities were also acquired together by digital camera with Bluetooth.



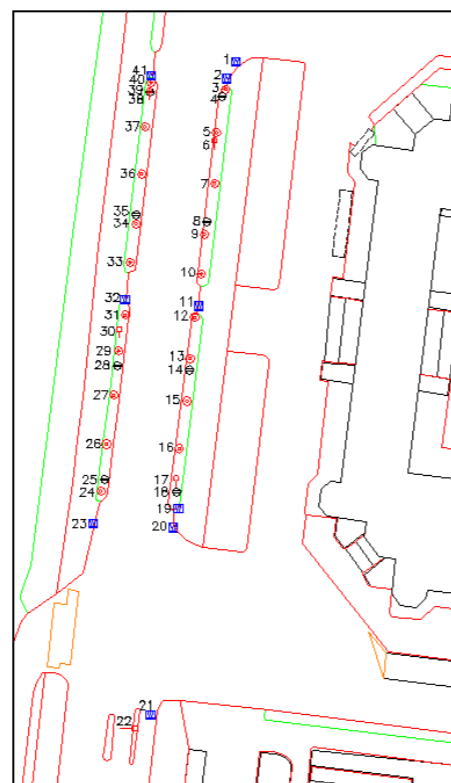
Study site(Chungnam National University)



Sight of facility surveying

CONSTRUCTION OF ROAD FACILITY DB

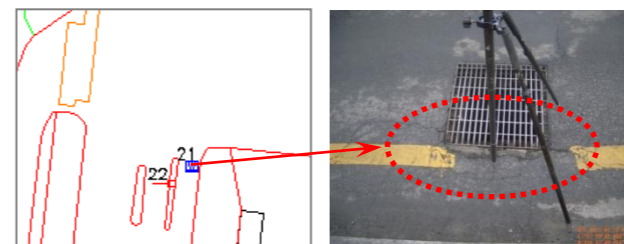
- Positions of road facilities acquired by DGPS were marked in the digital topographic map using layer codes and symbol.



Positions and images of road facilities



- Database construction and update of road facilities using DGPS and digital camera which can grasp the condition of facilities without additional field survey because positions and images about facilities are able to acquired simultaneously.
- It will be able to reduce the additional expenses for field visit and survey because it is able to judge location and situation of the damaged road effectively.



Location and status of the damaged road

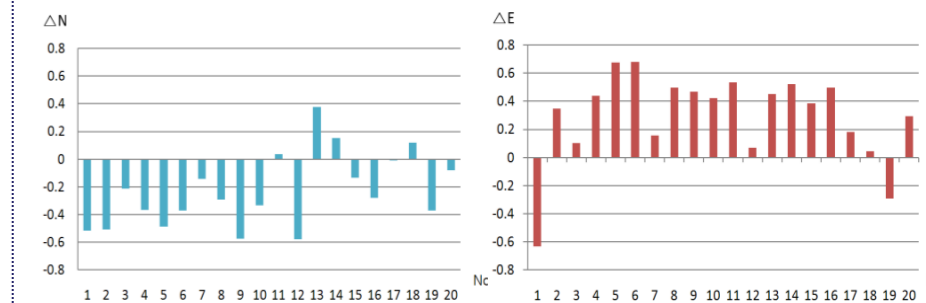
- Acquired images are able to be utilized in GIS software and GIS system because coordinates about acquired images are inserted.
- A next figure shows that acquired images uploaded in Google Earth and it is able to add positions and images about facilities effectively.



Image uploaded in Google Earth

ACCURACY ASSESSMENT

- 20 check points were installed and results of DGPS were compared with results of total station to evaluate the accuracy about position of the acquired facilities.



Deviation of X axis

Deviation of Y axis

- In comparison with results, latitude error is -0.229m and longitude error is 0.292m. Also latitude RMSE is 0.354m and longitude RMSE is 0.429. These errors will be able to improve by using precise GPS receiver.

CONCLUSIONS

- In this study, the road facility DB was constructed by digital camera with a built-in bluetooth and DGPS, the following conclusions are enumerated.
- The first, location and image of road facility were effectively obtained by using digital camera and DGPS.
- The second, in comparison with results by total station and DGPS, latitude error is -0.229m, longitude error is 0.292m. However this error will be able to improve by using high precise GPS receiver.
- The third, obtained data, location information and digital image, using digital camera and DGPS will be able to utilize effective realtime update and management of road facility such as creating and repairing.



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CONSTRUCTION OF ROAD FACILITY DB

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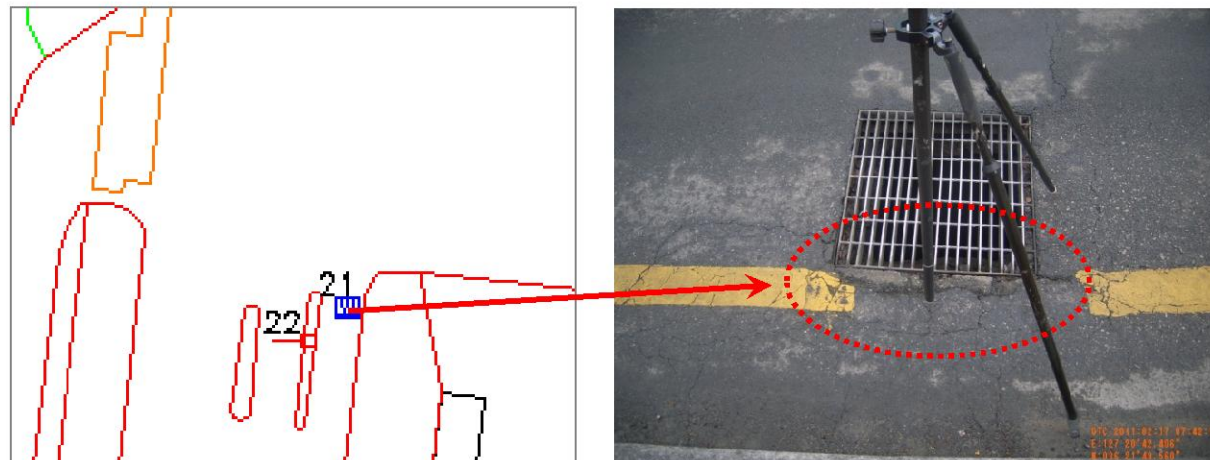


Positions and images of road facilities

CONSTRUCTION OF ROAD FACILITY DB

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Location and status of the damaged road

CONSTRUCTION OF ROAD FACILITY DB

Acquired images are able to be utilized in GIS software and GIS system because coordinates about acquired images are inserted.

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tree



by KMG

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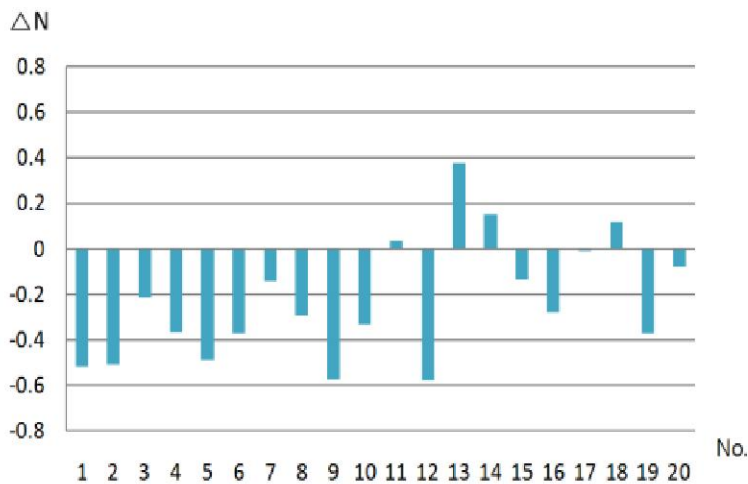
Submit to the 2월 contest (max. 5 photos)



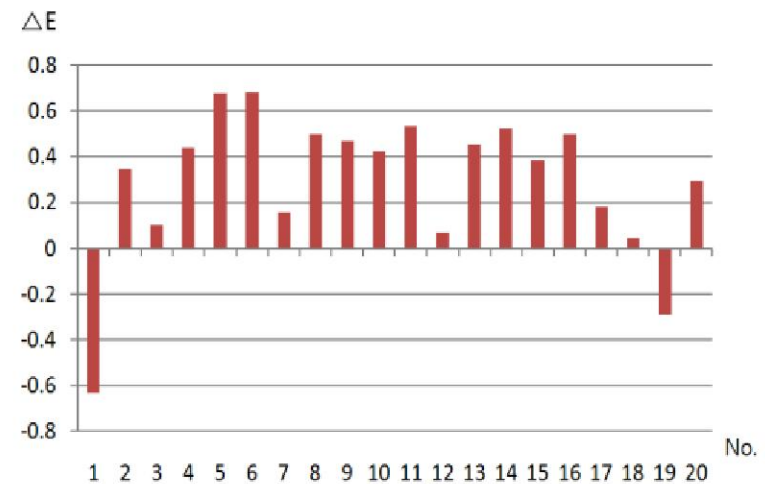
Image uploaded in Google Earth

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