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Examiner at LTH:

Thesis description

Category

Computer vision

Scope: 1-2 students completing 30 credits (20 weeks) each

Background

We have developed Hägring, a powerful Augmented Reality product. Hägring makes it possible to see any CAD models like buildings, roads, bridges or sculptures mixed with reality in real time and full scale.

We are using RTK GPS for positional tracking, thus getting down to 1-2 cm accuracy. With this Hägring can easily be used for surveying or see constructions correctly positioned on site.

Goal

What we want to get with computer vision combined with RTK GPS and IMU is.

- 1. To always in real time exactly know the position in global world coordinates eg. Sweref99 and the orientation of the Hägring regarding to yaw, roll, pitch in global orientation eg yaw corresponds to Cardinal direction. The accuracy of the position should be around +- 2 cm. The orientation should have an accuracy of 0.5 degrees.*
- 2. To build up the reality, 3D mapping in real time. The cameras will scan the environment and with the help of having an exact position being able to put all 3D mapped objects into global coordinates. The accuracy in real time need an accuracy of around 10-20 cm. But post processing should be possible to get 2-5 cm accuracy.*
- 3. To be able to work without GPS aid for shorter periods. That it should be possible to map some areas with only IMU and Stereo vision. Accuracy 10-20 cm in real time. But post processing to 2-5 cm. Next time in same place the accuracy should be 2-5 cm.*

Technical specification of our system Hägring

- Stereovision 1500x1200 color 60 Hz*
- IMU sensor 90 Hz*
- GPS RTK 1-2 cm accuracy x,y,z*
- GPU Nvidia GTX1060*
- CPU I5-7500*

Application

Send application to info@bjorkstromrobotics.com

- Attach a Curriculum Vitae (CV)*
- Attach University grade summary*

About Bjorkstrom Robotics AB

We are a startup company based in Ideon Science Park. We are team of experienced developers, architects, visual engineers and construction industry experts that have developed a unique 3D-visualization tool, Hägring.

Hägring is based on Augmented/Mixed/Virtual reality, AR/MR/VR. That combined with high accuracy GPS makes it possible to experience future buildings on site that have not yet been built. You can freely move around, into and through the building. Hägring gives you an intuitive feeling of building's dimensions and how it fits into the existing surroundings, all in real time. It so real that you'll believe that the building is already built!

Hägring is easy to use and always connected to the cloud to make it possible for total remote control and easy management.