

TEAM PROJECT INFORMATION FOLDER – JUNE 2014

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	guidance, trainer, VBS, simulation



PROJECT TITLE:

Rescue helicopter landing guidance trainer

OBJECTIVES AND SCOPE:

Creation of simulator supporting helicopter landing guidance training.

1. Increase mobility of MultiKinect by connecting them to small devices (e.g. development board) and streaming data to one main unit for further processing. Decrease the interference between Kinects directed in the same direction to make it more accurate. 2. Integrate MultiKinect with VBS.

3. Create logic for rescue helicopter landing guidance trainer.

RESULTS:

1. Created concept of final solution.

2. Created prototype of streaming application to stream from Intel Galileo development board data read from Kinect.

- 3. Implemented compressed point cloud streaming server and it's client.
- 4. Implemented detection of hands in 3D space based on point cloud.
- 5. Added a small motor that vibrates the Kinect solves the interference problem.
- 6. Implemented VBS2 ASI Plugin for control the helicopter in a predefined scenario.

MAIN FEATURES, FUTURE WORKS:

Main features:

- 1. Small size of device connected to Kinect (development board instead of full sized PC).
- 2. Computations performed on one PC-based workstation.

Future works:

1. Increase performance of streaming application (add compression to stream and increase performance of reading data from Kinect to get both streams simultaneously).

- 2. Compile PCL library for Intel Galileo development board.
- 3. Compile compressed streaming server on Intel Galileo using PCL.
- 4. Create an API to detect gestures based on hand movements.
- 5. Improve hands detection to include individual fingers.

6. Create a wearable suit with sensors as an alternative or aid for the Kinects in movement detection.

7. Map the movements of the trainee onto VBS avatar.