# Ground Robots:

The customer requires (Requirement 3) at least a team of two robots working together and one of which should be an aerial robot. The other robot proposed to be used is a ground robot and is to have the following applications:

* Used for off board processing
* Map the area in parallel to the quadcopter
* Carry and deliver payload, reducing load carried by the quadcopter
* Act as the point of communication between aerial robots and ground station
* Act as a centralized planning units, dictating where the aerial robot is to go next

It is proposed that the team will use the TurtleBots from Prof. Nisar Ahmed’s lab. These TurtleBots have the following hardware specifications:

* Kobuki Base
* Microsoft Kinect
* Netbook
* Kinect Mounting Hardware

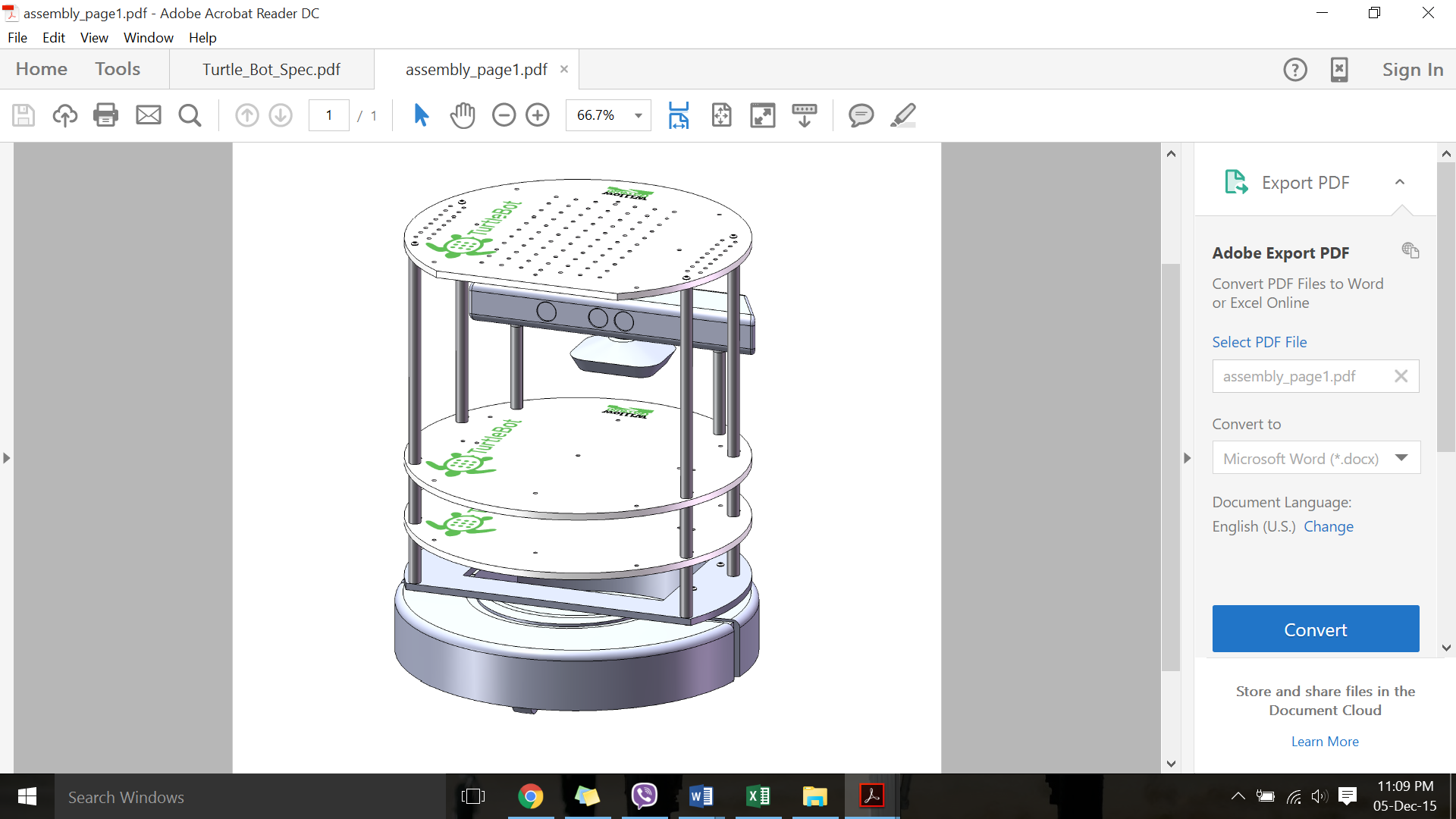


Figure 8:Exsisting TutrleBot

At the moment, the TurtleBots takes goal positions or velocity commands as its input and do not do any mapping on their own. It also relies on the depth image from the Kinect for obstacle avoidance. Hence, it is suggested that we use Hector\_Slam using a Hokuyo Laser Scanner. It is also proposed that the ground robots will carry scanner with which the can tag and scan targets.

## Path Forward:

* Understanding the working of the current system on the TurtleBots
* Implementing SLAM on the TurtleBots
* Fabricate additional hardware components to accommodate new hardware additions (on-board computer, laser scanner, payload delivery system)
* Implement 2-D path-planning algorithms and send goal positions
* Integrate with aerial robot