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REAL TIME SENSORS DATA PROCESSING

Sensor it is the most powerful part of any system. Aviation industry is the place where millions of sensors is be used for difetrent purposes [1]. Othe wery important task of avionics equipment is data transfer between sensors to processing equipment.

Why it is so important to transmit data online into MatLab? Nowadays rapidly are developing unmanned aerial vehicles. If we can transmit data from UAV sensors into MatLab, then we can process it and get the desired information about UAV. Of course we have to use the most chipiest way to data transfer.

Today everyone in the world has mobile phone. Many of them has different sensors, such as: pressure sensor, temperature sensor, gravity sensor, gyroscope, rotation vector sensor, proximity sensor, light sensor, orientation sensor, magnetic field sensor, accelerometer, GPS receiver and so on. It will be cool if we can use real time data from cell phone sensors for some navigation tasks. In our work we use mobile phone Samsung Galaxy SIII with all sensors which are listed above except temperature sensor. There are existing many programs for reading and displaying data from sensors, such as: “Sensor Kinetics”, “Sensors”, “Data Recording”, “Android Sensors Viewer”. We used “Data Recording”.

For the purpose of transmitting data from cell phone there are following methods:

- GPRS (Mobile internet);
- Bluetooth;
- USB cable;
- Wi-Fi.

After comparing this methods we analyzed that GPRS is uncomfortable for us because we should pay for it, Bluetooth has small coverage, USB cable has not such portability as others methods. So we decided that Wi-Fi is optimal method on transmitting data for our goal.

To create Wi-Fi connection between computer and mobile phone we use program “Connectify Hot Spot”, and for sharing files from android devise to computer we used “ES Explorer” that allow to share any directory on the device which we want.

Data can be processed with the help of MatLab. For this purpose we used function *url()* with help of which we can read data from remote file.

As a result we can work in MatLab with data from sensors in real time using following programs:

- “Connectify Hot Spot” on the computer
- “Data Recording” and “ES Проводник” on the android device.

References

1. Авіоніка: навч. посіб. / В.П. Харченко, І.В. Остроумов – К.: НАУ, 2012 – 281с.

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