

COMP4336/9336 Mobile Data Networking

Lab 6: Observation of Bluetooth Low Energy Frequency Hopping

程序代写代做 CS编程辅导

Objectives

- To observe and understand Bluetooth Low Energy Frequency Hopping (Algorithm #1)

Prerequisites

- Access to MATLAB (all students have free access to MATLAB)
- Knowledge of Bluetooth Frequency hopping Algorithm #1. This is covered in Lecture 5. You can also find details of this algorithm from the following core Bluetooth document (page 2644): https://inst.eecs.berkeley.edu/~ee290c/sp18/note/BLE_Vol6.pdf



Your Tasks

WeChat: cstutorcs

- Read Lecture 5 notes, listen lec5-video, and master the concept of Bluetooth frequency hopping in general and BLE fixed hop increment frequency hopping algorithm, a.k.a. Algorithm #1.
- Install MATLAB and Communications Toolbox™ (UNSW provides free license to all students). Available from the following URL: <https://www.it.unsw.edu.au/students/software/matlab.html>
- Read the Bluetooth frequency hopping example provided by MATLAB, which can be accessed at URL: <https://au.mathworks.com/help/comm/examples/ble-channel-selection-algorithms.html#BLEChannelHoppingExample-28>
- Open the frequency hopping example in Matlab by running the following command:

Assignment Project Exam Help

Email: tutores@163.com

QQ: 749389476

```
openExample('bluetooth/BLEChannelHoppingExample')
```

<https://tutores.com>

A new file will be opened in Editor and you should click on the Run button to execute it. You are **not** going to edit the code or understand all the lines. After running the example, answer the following questions and submit them as a PDF report:

- 1- Explain Algorithm #1's calculations and equation when *unmappedChannel* is a *good* channel. (1 mark)
- 2- Explain algorithm #1's calculations and equation when *unmappedChannel* is a *bad* channel. (1 mark)
- 3- Use the “graphical user interface” in the example to run algorithm #1. Now consider that, in the vicinity of the Bluetooth network, a 2.4GHz WLAN is operating on WiFi Channel 1. Work out and select the *good* and *bad* channels for this scenario. Select a *hop increment* of your choice, set the *number of channel hops* to 10, tick the Visualization and generate the hopping sequence for these 10 hops. Add the resulting figures to your report and explain the figures in one paragraph. (2 marks)

Penalty at the rate of 5% for each day late will be strictly enforced for all lab submissions. All submissions will be subject to strict UNSW plagiarism rules.

End of Lab 5 – Hope you enjoyed this lab.