

## Instructions for MECH4420 Lab Car Data Collection

To run the VD Data Collection Lab on MacKenZie, do as follows:

- 1) Turn on the car:
  - a. The key will be in the vehicle, however if it is off, simply press the on button located to the upper left of the infotainment screen.
- 2) Turn on the electronics in the trunk:

If the vehicle is off, the electronics (sensor suite) will mostly likely be off as well. To turn the sensor suite on do as follows:

  - a. Turn the red three-position rotary switch located in the left fabric cavity of the trunk to the “1” position (turn it counter-clockwise if you are looking at the switch straight on). The switch is a red circular switch located directly above the battery.
  - b. After the rotary switch is turned to 1, turn the toggle switch directly below the rotary switch to the “I” position. This is located directly below the previous switch.
  - c. Turn the 600W Power Inverter on. This is located behind the left half of the sensor rack. You should see a bunch of lights turn on directly above the inverter.
  - d. Turn the computer on. The computer is located behind the right half of the sensor rack. The on button is a square, gray, power button on the back of the computer facing the truck. The computer is the box with orange paneling labeled “On Logic”.
  - e. Finally, turn on the monitor in the front passenger seat and the Bluetooth keyboard. The monitor power supply is the 12V cigarette port adapter with a switch located under the media screen. It will flip and turn green. The Bluetooth keyboard power switch is located on the front of the keyboard.
    - i. Note 1: The screen on the monitor will not immediately show the login for the computer you have to move the mousepad on the keyboard
    - ii. Note 2: The monitor is old so if you bump the HDMI cable the monitor may stop showing the computer. This does not affect any software, however you have to unplug and replug the HDMI cable a few times to get it to work again. We are replacing the monitor, however for right now, just keep this in mind.

- 3) Turn on sensor suite
  - a. Drive the MKZ outside so it has a clear line of sight to the sky (this is needed for the GPS systems to work)
  - b. Open a terminal  
Press *ctrl+alt+t* at the same time to open a new terminal
  - c. Navigate to the vehicle dynamics workspace in the mkz  
`>>cd devel/vd_ws`
  - d. Source the vehicle dynamics workspace  
`>>source devel/setup.bash`
  - e. Launch the sensor suite  
`>>roslaunch navbox_renamer vd_launch.launch`  
Press enter once, or the septentrio GPS receiver will not properly turn on.
  - f. Wait approximately 1 minute for all the sensors to turn on.
  - g. Congratulations the sensor suite is turned on
- 4) Record data
  - a. In the same terminal, press *ctrl+shift+t* to open a new tab. You can navigate between tabs by clicking on the desired tab, or by pressing *alt+#*, where “#” is the desired pane numbered left to right.
  - b. Enter the lab\_recordings folder
    - i. `>>cd bags/lab_recordings`
  - c. Record a .bag file (this is where the data is stored)
    - i. `>>./mkz_record.sh BagName`  
**BagName** is the name you want to give your bag file
    - ii. For my sake I am asking everyone to stick to the naming convention “group\_#\_lastname” where # is your group number and lastname is the last name of the person recording the bag file
    - iii. To stop a recording enter *ctrl+c*. You should see the prompt to enter commands into the terminal return
- 5) To turn off the sensor suite:
  - a. Navigate to the pane where the sensor suite is running and enter *ctrl+c* to shut down the sensors

To run the VD Data Collection Lab on KIA, do as follows:

- 1) Turn on the car with the key fob.
  - a. The battery is weak in the key, so press the on button with the key.
- 2) To turn on electronics in the trunk.
  - a. A rotary switch is located in the truck directly in front of the sensor rack. Turn this rotary switch to the “1” position.
  - b. Turn on the computer located inside the leftmost cell of the sensor rack.
  - c. If the monitor in the front passenger seat does not turn on, press the power button on the top of the monitor
- 3) Turn on sensor suite
  - a. Press “*ctrl+alt+t*” to open a terminal window
  - b. Go to the vehicle dynamics workspace
    - i. `>> cd devel/vd_ws`
  - c. Source the vehicle dynamics workspace
    - i. `>> source devel/setup.bash`
  - d. Launch the sensor suite
    - i. `>> roslaunch navbox_renamer vd_launch.launch`
  - e. To turn off the sensor suite press “*ctrl+c*” in this tab
- 4) To record a dataset
  - a. Press “*ctrl+shift+t*” to open a new tab on the terminal windows you launched the sensor suite from
  - b. Record a dataset
    - i. `>> ./kia_record.sh BagName`
  - c. To end a dataset recording press “*ctrl+c*”