Uçuş Simülatörü için Joystick Arayüzü

BIL 495
1. İzleme

Şevval MEHDER

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İçerik

- Projenin Şeması ve Tanımı
- Proje Tasarım Planı
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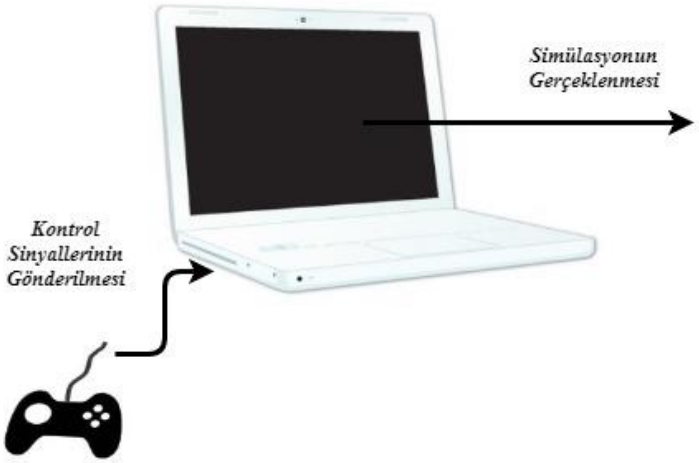
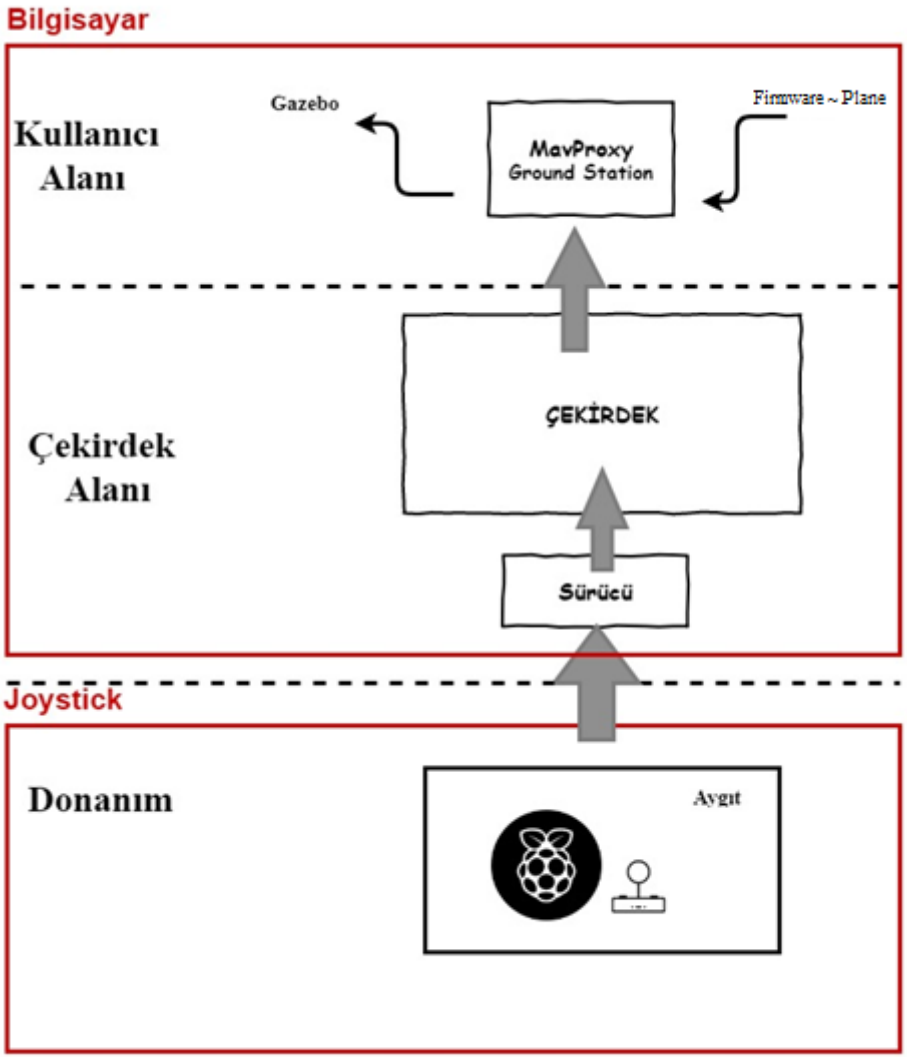
Proje Şeması ve Tanımı



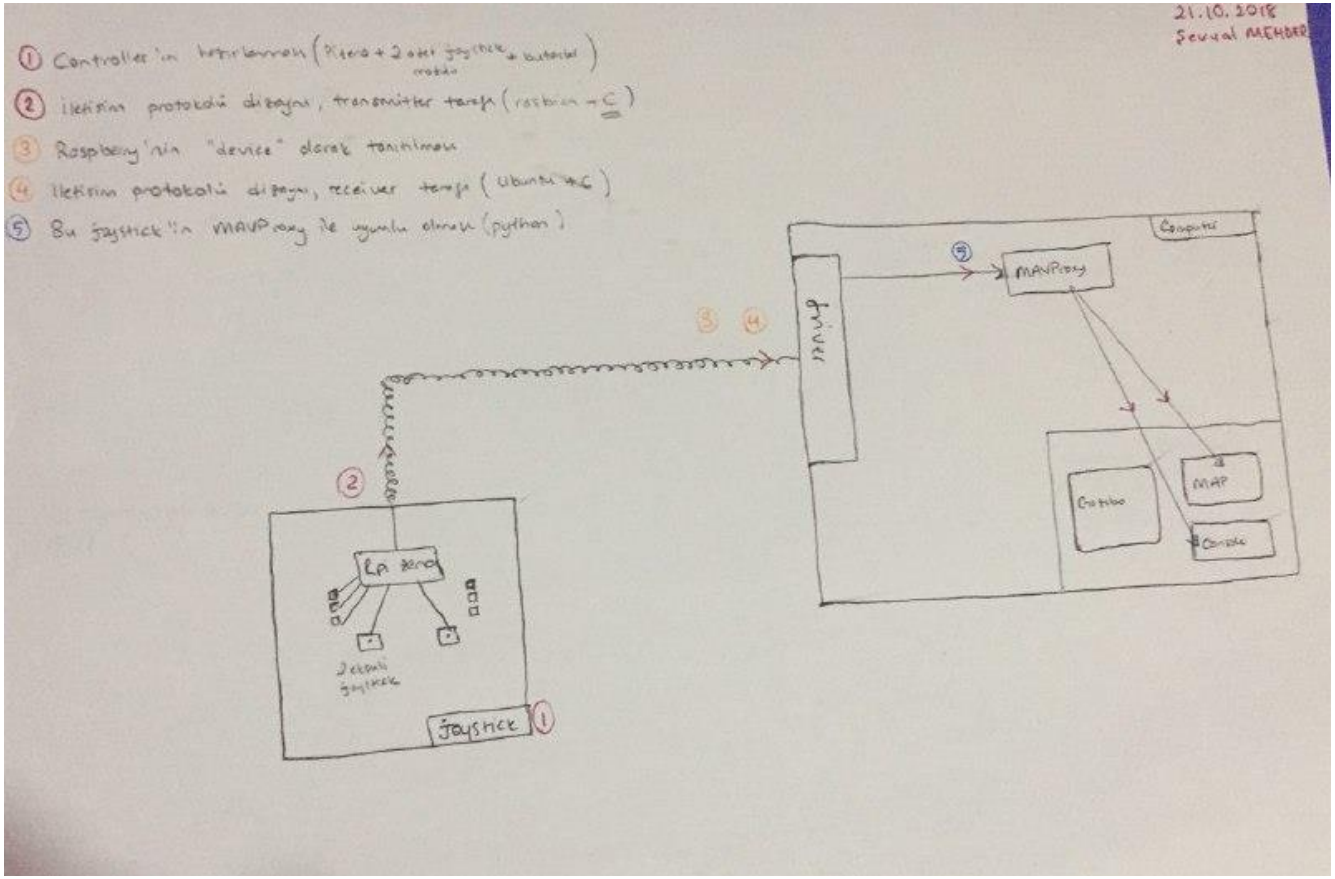
- ArduPilot Simülasyon Programı için bir joystick donanımı ve arayüz hazırlanması.

Proje Tasarım Planı



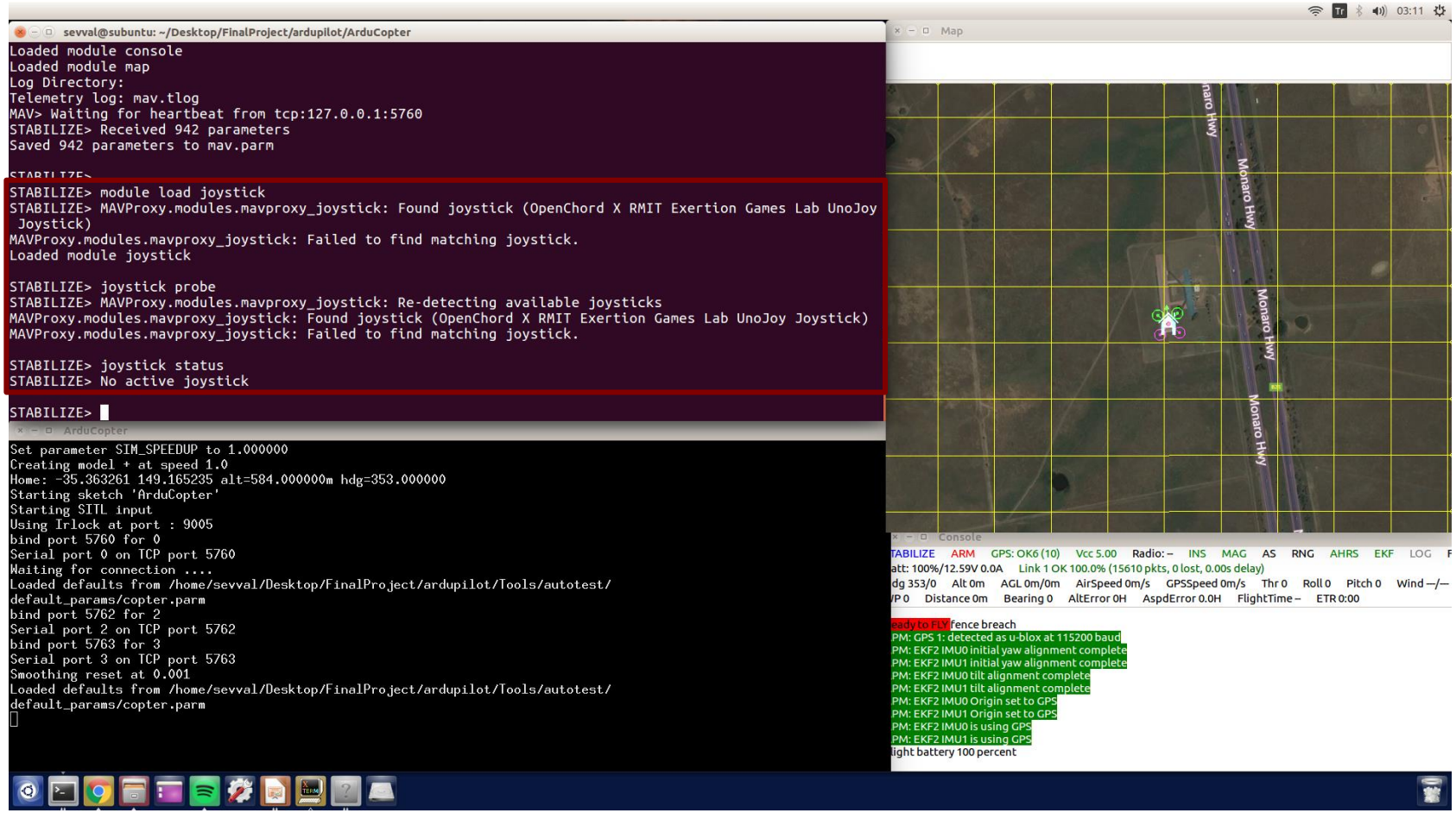
Yapılanlar

- Süreç(process) ve enstrümantal(instrumental) diyagram çıkarıldı.



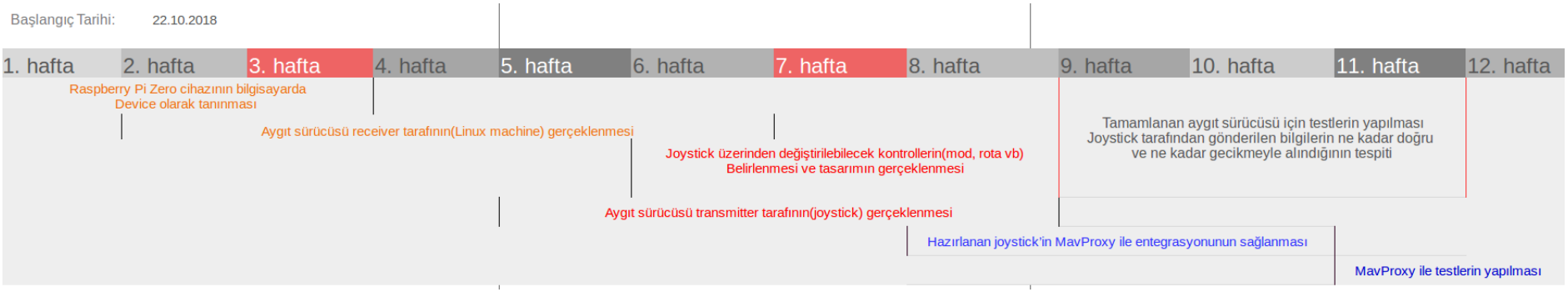
Yapılanlar

- Diyagramdaki 5. maddenin başka bir yolla denenmesi



Yapılanlar

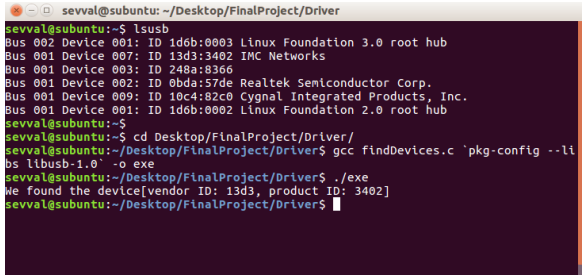
- İş planının hazırlanması



Yapılanlar

- Driver kısmındaki görevlere başlanması:
  Bilgisayara takılan aygıtın tanınması

```
#define VENDOR_ID 0x13d3
#define PRODUCT_ID 0x3402
```




```c
int main(){

    // Device list
    libusb_device **devs;
    // Count of the devices
    size_t count;
    // Return value
    int r;
    // Is device exist?
    bool isExist;

    // Call the initialize function
    if( LIBUSB_SUCCESS != libusb_init(NULL))
        return r;

    // Get the devices
    count = getAllDevices(&devs);
    if( count < 0)
        return count;

    // Get memory for device and call search function
    isExist = recognizeDevice(VENDOR_ID, PRODUCT_ID, devs);

    if(isExist)
        printf("We found the device[vendor ID: %x, product ID: %x]\n", VENDOR_ID, PRODUCT_ID);
    else
        printf("Device cant found :(\n");

    // Frees a list of device previously discovered using get_device_list()
    // unref_devices parameter sets 1
    // this means the reference count of each device in the list is decremented by 1
    libusb_free_device_list(devs, 1);


    // Deinitialize libusb
    // Should be called before termination
    libusb_exit(NULL);

    return 0;
}
```

Denenenler

- Raspberry'nin device olarak tanıtılması

pi@raspberrypi: ~

```
[     2.615717] systemd[1]: Listening on Syslog Socket.
[     2.623684] systemd[1]: Listening on Journal Socket.
[     2.631607] systemd[1]: Listening on /dev/initctl Compatibility Named Pipe.
[     2.677445] systemd[1]: Listening on udev Kernel Socket.
[     2.685129] systemd[1]: Reached target Swap.
[     3.161741] dwc2 20980000.usb: 20980000.usb supply vusb_d not found, using dummy regulator
[     3.168762] dwc2 20980000.usb: 20980000.usb supply vusb_a not found, using dummy regulator
[     3.643114] dwc2 20980000.usb: EPs: 8, dedicated fifos, 4080 entries in SPRAM
[     3.650112] dwc2 20980000.usb: DWC OTG Controller
[     3.673073] dwc2 20980000.usb: new USB bus registered, assigned bus number 1
[     3.676309] dwc2 20980000.usb: irq 33, io mem 0x20980000
[     3.703358] usb usb1: New USB device found, idVendor=1d6b, idProduct=0002
[     3.706549] usb usb1: New USB device strings: Mfr=3, Product=2, SerialNumber=1
[     3.709608] usb usb1: Product: DWC OTG Controller
[     3.712554] usb usb1: Manufacturer: Linux 4.14.71+ dwc2_hsotg
[     3.715538] usb usb1: SerialNumber: 20980000.usb
[     3.796860] hub 1-0:1.0: USB hub found
[     3.813082] hub 1-0:1.0: 1 port detected
[     5.280566] EXT4-fs (mmcblk0p2): re-mounted. Opts: (null)
[     5.819609] systemd-journald[85]: Received request to flush runtime journal from PID 1
[     8.563947] snd_bcm2835: module is from the staging directory, the quality is unknown, you have
been warned.
```

Kaynaklar

- 1. Libusb API: http://libusb.sourceforge.net/api-1.0/
- 2. RPi Zero USB aygıt desteği hakkındaki pull requst: https://github.com/raspberrypi/linux/issues/1212
- 3. RPi Zero USB aygıt desteği hakkında adafruit dökümanı: https://cdn-learn.adafruit.com/downloads/pdf/turning-your-raspberry-pi-zero-into-a-usb-gadget.pdf
- 4. MavProxy joystick modülü yüklenmesi: https://ardupilot.github.io/MAVProxy/html/modules/joystick.html