

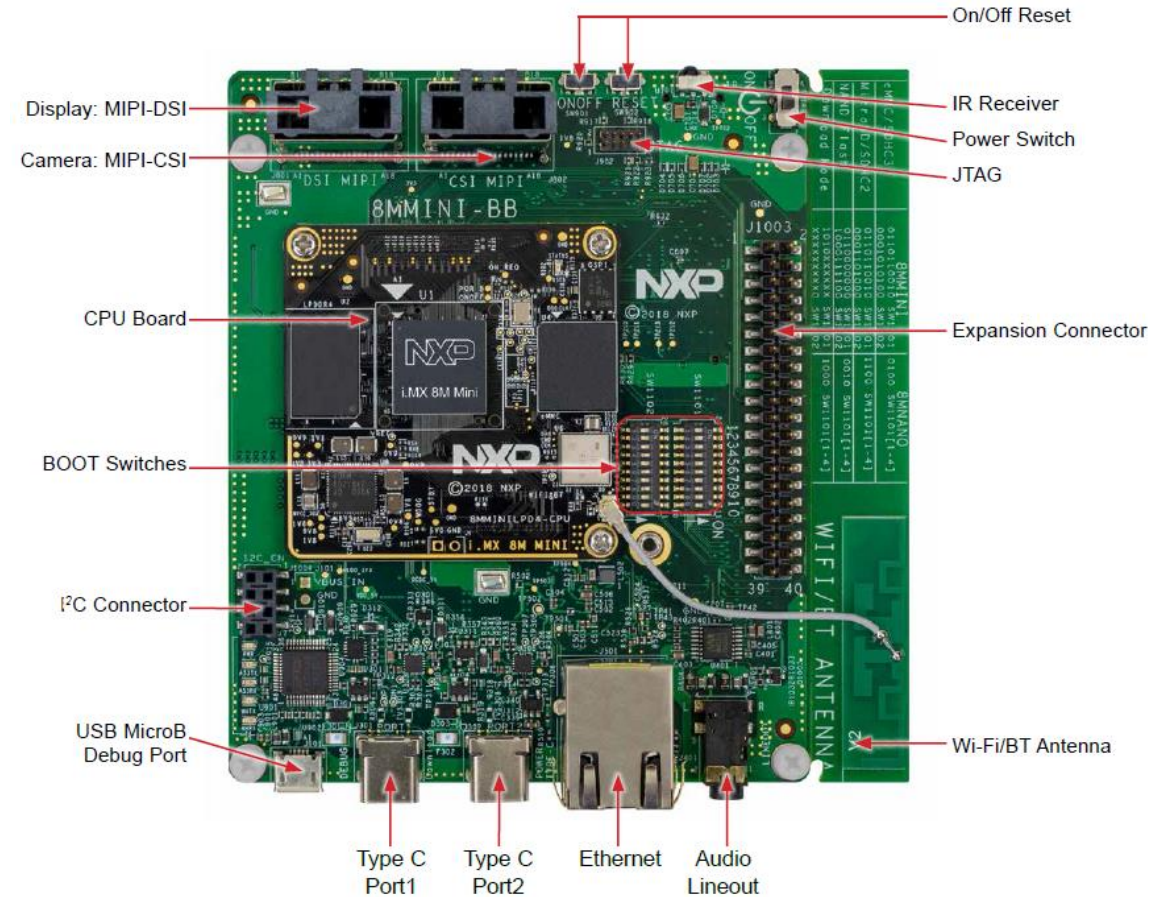
LANE DETECTION USING I.MX 8M



Contents

- Get to know the board- <https://www.nxp.com/docs/en/quick-reference-guide/8MMINILPD4EVKBQSG.pdf>
- Setup of I.MX 8M Mini
- Running python-Open CV code on I.MX 8M Mini

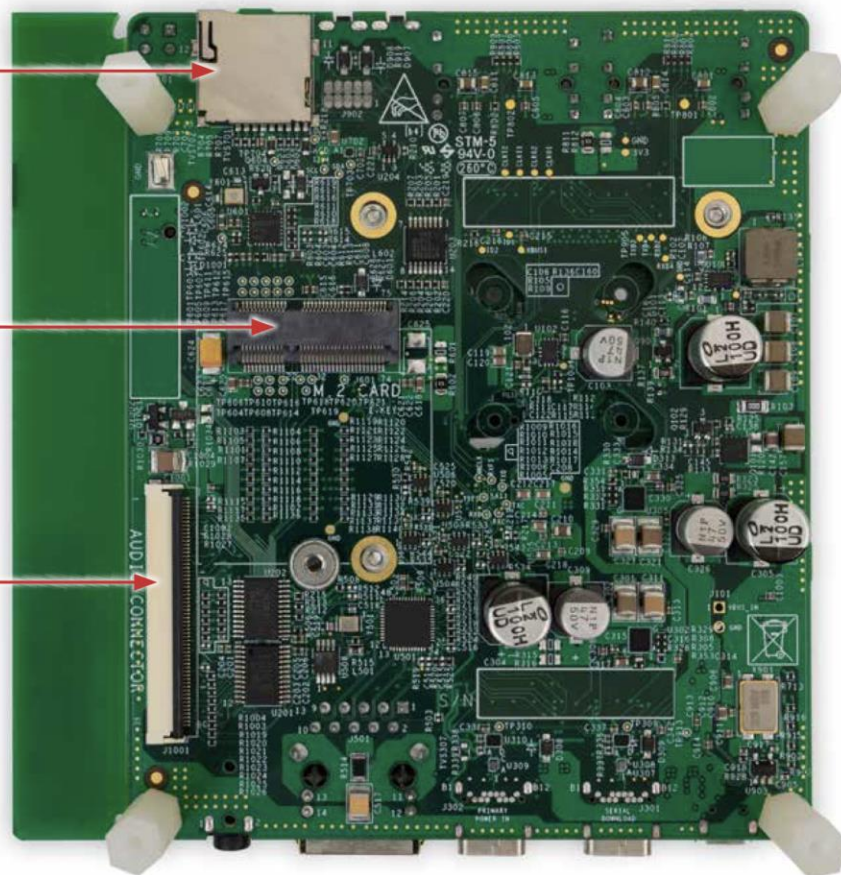
i.MX 8M Mini



MicroSD Card
Connector

M.2 Connector
(PCIe®)

Audio Board
Connector



If the serial port is not recognized, download and install updated drivers as listed below

Open the terminal window(Tera Term), choose the COM port number that corresponds to the "Enhanced COM port" or the highest numbered port and apply the following configuration.

- Baud rate: 115200
- Data bits: 8
- Parity: None
- Flow control: None

Boot Up Procedure (for MicroSD mode)

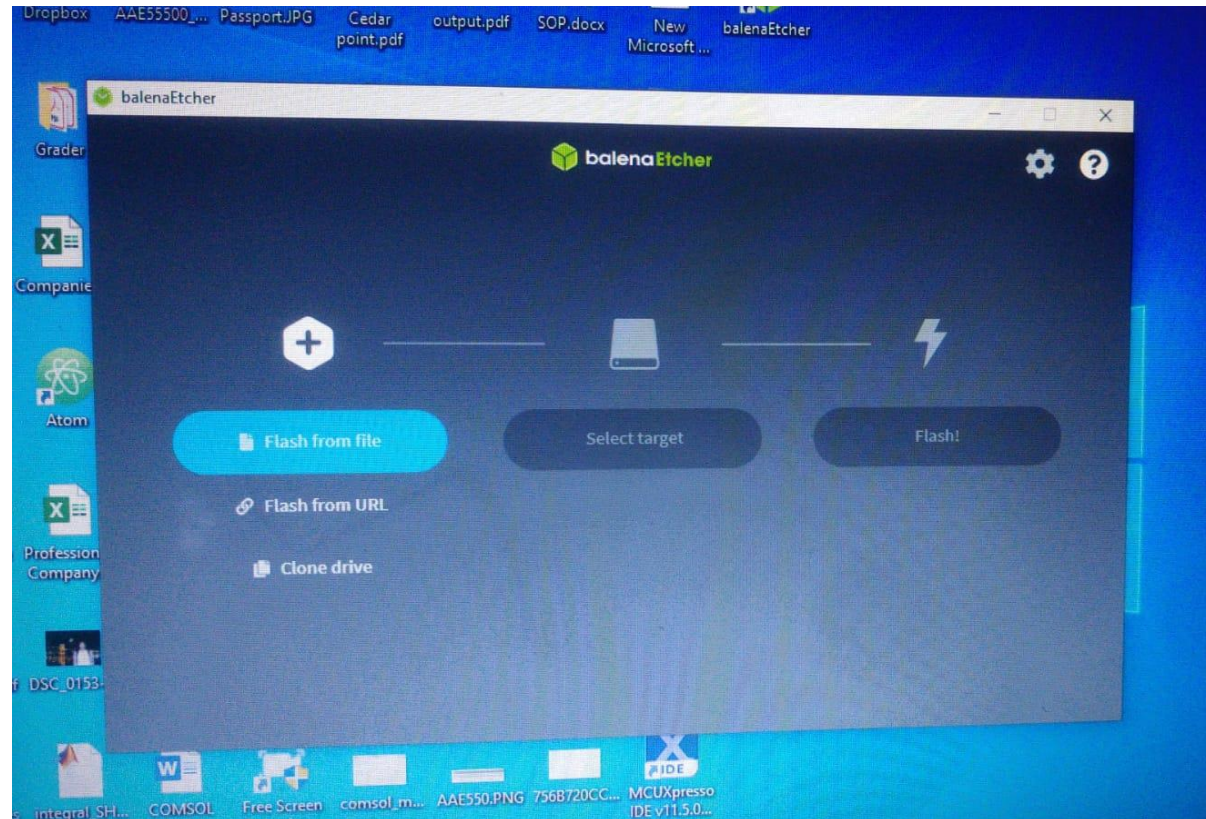
- I.MX8M Mini can be configured with Android, Linux or Windows Operating systems. In this Lab we will be using Linux Operating System.
- Download Linux Operating system for I.MX8M Mini EVK from:

Linux Releases

Linux Current Release

Release and Documentation	Build Sources	Supported Platforms/Binary Demo Files	Incremental Releases
Linux 5.15.5_1.0.0 Release Date: Mar 2022 Documentation <ul style="list-style-type: none">• i.MX Linux Release Notes• i.MX Linux User's Guide• i.MX Linux Reference Manual• i.MX Porting Guide• i.MX Yocto Project User's Guide• i.MX VPU API Reference Manual• i.MX Graphics User's Guide• i.MX Machine Learning User's Guide	<ul style="list-style-type: none">• See README on instructions for each release.• AACPlus Codec• Verisilicon IDE	<ul style="list-style-type: none">• i.MX 8M Plus EVK• i.MX 8M Nano DDR3L EVK• i.MX 8M Nano EVK• i.MX 8M Mini EVK• i.MX 8M Quad EVK• i.MX 7ULP EVK• i.MX 6UltraLite, i.MX 6ULL, i.MX 6ULZ, i.MX 7Dual• i.MX 6SLL EVK• i.MX 6QuadPlus, i.MX 6Quad, i.MX 6DualPlus, i.MX 6Dual, i.MX 6DualLite, i.MX 6Solo, i.MX 6SoloX• i.MX 8M EVKs boot image(SystemReady-IR certified)	<ul style="list-style-type: none">• SCFW Porting Kit 1.12.1• i.MX 8DXL EVK• i.MX 8QuadXPlus(C0) MEK• i.MX 8QuadMax MEK

- Download and install Balena Etcher to flash the micro SD card with Linux Operating System.

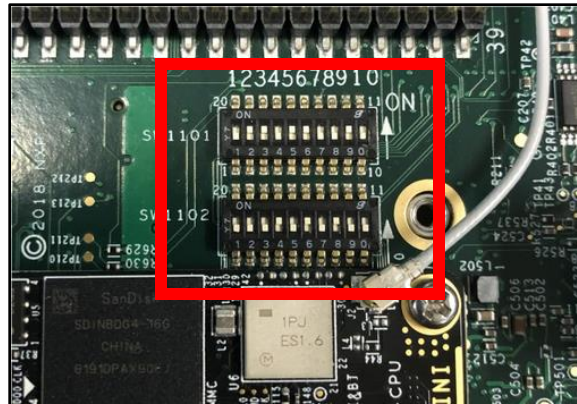


- After the Micro SD card is loaded with Linux OS.
- Insert the Micro SD card to the I.MX board.
- **Confirm Boot Switches**
- The boot switches should be set to boot from the Micro SD

BOOT Device	SW1101	SW1102
MicroSD/SDHC2	0110110010	0001101000

1=ON

0=OFF



Power up the board

- **Connect USB Debug Cable**

Connect the micro-B end of a USB cable into debug port J1701. Connect the other end to the PC. Two UART connections will appear on the PC, one for M4 core, one for A53 core. The console print will output on "Enhanced COM port", which can be found in "Device Manager" of the PC

- Connect HDMI Display

Connect the mini SAS cable to J801 on the EVK(MIPI DSI connector) and connect the other end to the J5 on the MIPI to HDMI accessory card. Connect an HDMI cable to J2(HDMI port) on the MIPI to HDMI accessory card and connect the other end to a HDMI display panel



- Connect Mouse/Keyboard

Connect the mouse to J301 (USB type-C port1) through the USB type C to A adapter

- **Connect Ethernet Cable**

Connect the ethernet cable to ethernet port.

- **Board Boot Up**

- As the board boots up you will see 4 penguins appear in the upper left-hand corner of the Open Embedded, then the Linux desktop. Now the board is ready and you can run the code.

Boot Up Video



Running the Code in Linux Terminal

- Open the terminal and run the following command for running the lane detection code.

```
$mk dir project  
$wget https://github.com/swsmenon/Autonomous-Project-2/archive/master.zip -P project  
$cd project  
$unzip master.zip  
$cd Autonomous-Project-2  
$mk dir detected
```

- To check if the directories have been created type command:

```
$ ls
```


Editing the code for adding the path of datasets

```
$ nano AutonomousProjectNew.py
```

This will enable you to edit the code and add the path of data frames to the code corresponding to the location where it is stored in the I.MX8 Mini board. *(make sure to change the path wherever path location has been mentioned)*

```
col_frames = os.listdir('/home/swsmenon@ads.iu.edu/Downloads/frames4/Autonomous-Project-2-main/frames/')
col_frames.sort(key=lambda f: int(re.sub('\D', '', f)))

# load frames
col_images=[]
for i in tqdm(col_frames):
    img = cv2.imread('/home/swsmenon@ads.iu.edu/Downloads/frames4/Autonomous-Project-2-main/frames/'+i)
    col_images.append(img)
```

- Run python code

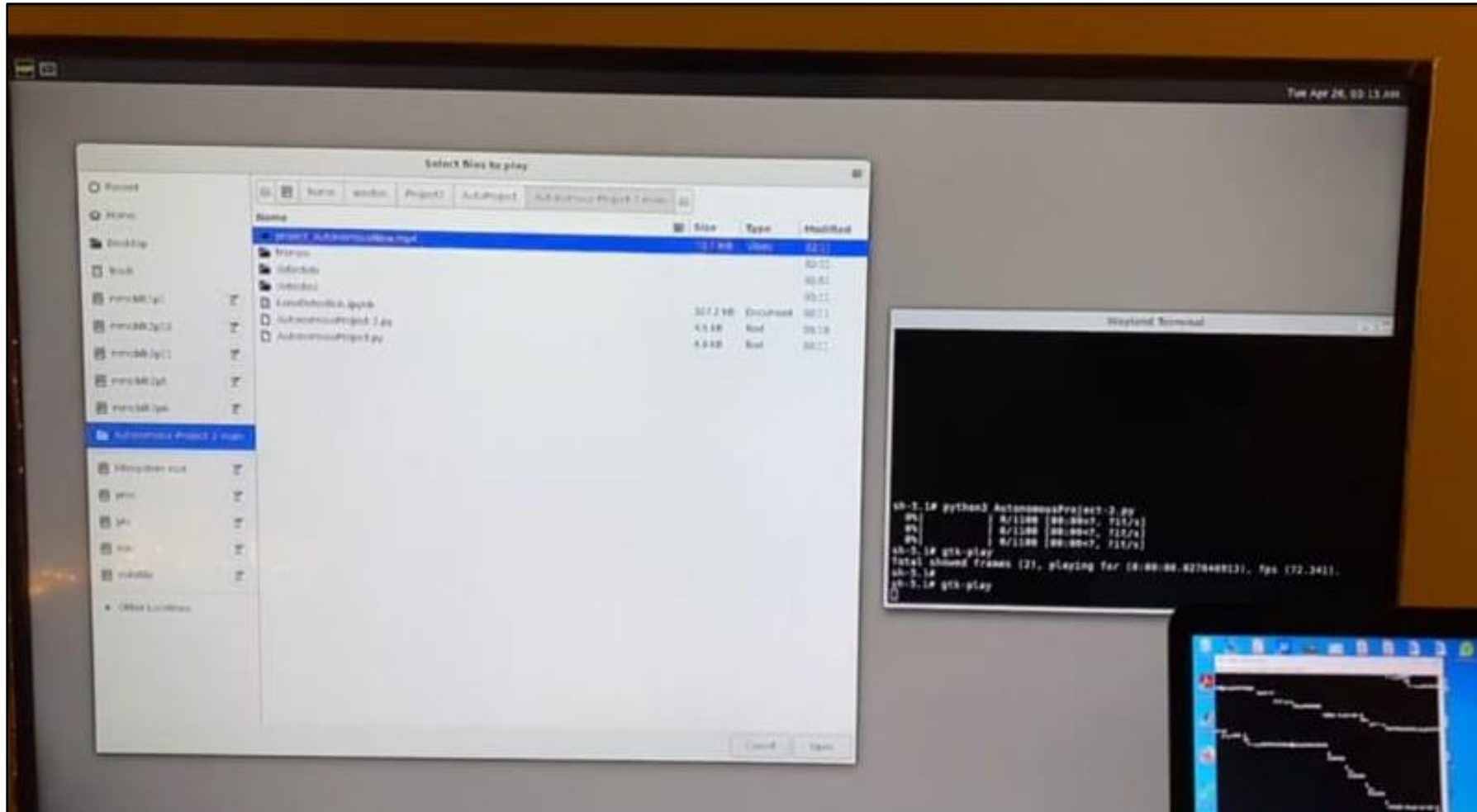
```
$ python3 AutonomousProjectNew.py
```

- To check if the output has been stored in the detected folder

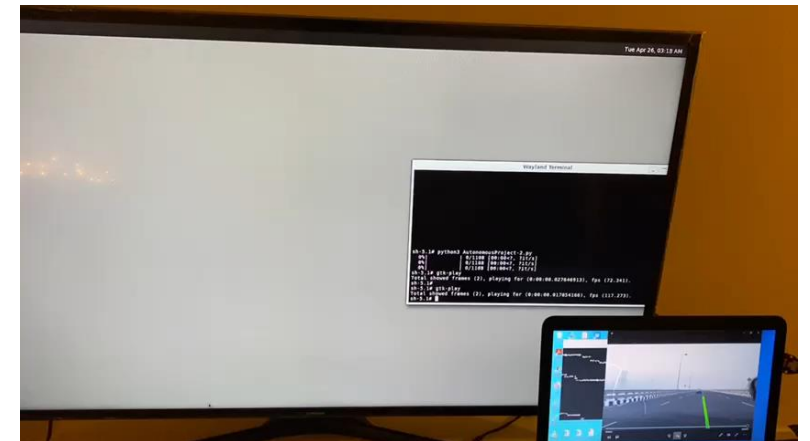
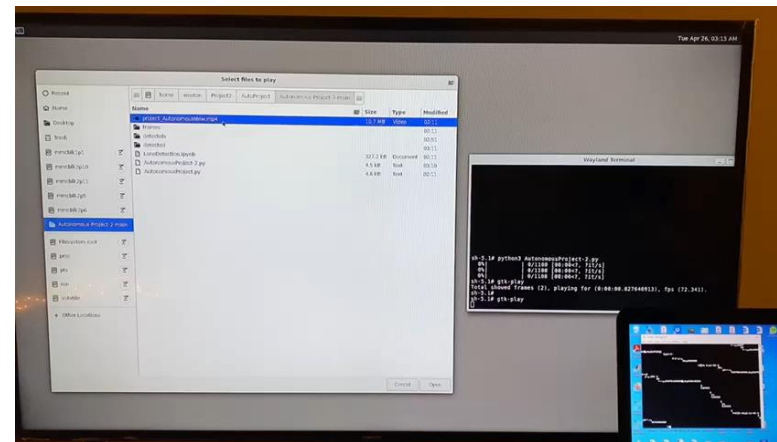
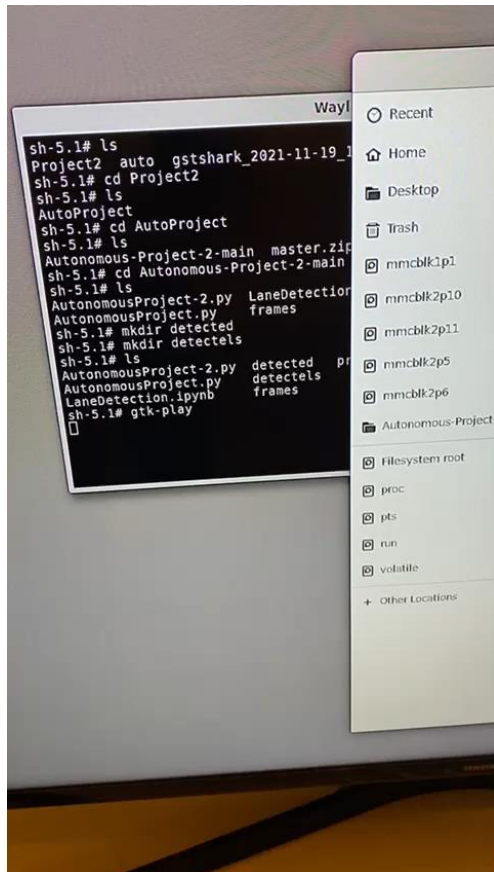
```
$ gtk-play
```

- You can check the files and folders , go to detected folder and click on the images saved.

Folder section should appear as shown below:



Videos for reference



Thank You!