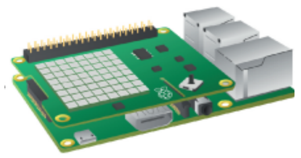
ASTRO PI

Python 3 Cheatsheet



To add **Astro Pi** functionality to your python programs add the following lines:

```
from astro_pi import AstroPi

ap = AstroPi()
```

From that point forwards you can use any of the set of functions from the Astro PI Library.

LED Matrix	`ap.set_pixel(0, 0, 255, 0, 0)`	Sets the top left LED to the colour red.
	`ap.show_letter(“J”, 0, 0, 255)`	Displays the letter “J” on the screen in blue.
	`ap.show_message(“msg”, scroll_speed=.1, text_colour=[0, 255, 0])`	Displays the message “msg” on the matrix in green.
	`ap.load_image( “creeper.png”, redraw=True)`	Load an 8x8 image (in this case “creeper.png”) file from the system and display it on the matrix.
	`ap.clear()`	Clears the LED and switches them all off.
	`ap.set_rotation(r=0)`	Sets the rotation of the LED matrix.
	`ap.set_pixels(pixelList)`	Uses the pixel list provided to draw a picture, the pixelList is a list of [R,G,B] values in a list.

Movement	`angles = ap.get_orientation_degrees()`
	`pitch = angles.get(“pitch”)`
	`roll = angles.get(“roll”)`
	`yaw = angles.get(“yaw”)`
		Finds out the current orientation of the Astro Pi board and stores it as a structure called “angles”. We can then find out the individual values of pitch, roll and yaw.

	`heading = ap.get_compass() + 180`	FInds out the current compass orientation of the board and returns the angle of north.

Plotting Pixels

```
import time
from astro_pi import AstroPi

ap = AstroPi()

r = (255,0,0)
g = (0,255,0)
b = (0,0,255)

pic = [
r,r,r,r,r,r,r,r,
g,g,g,g,g,g,g,g,
b,b,b,b,b,b,b,b,
r,r,r,r,r,r,r,r,
g,g,g,g,g,g,g,g,
b,b,b,b,b,b,b,b,
r,r,r,r,r,r,r,r,
g,g,g,g,g,g,g,g
]

ap.set_pixels(pic)
```

Rotating letter “J”

```
import time
from astro_pi import AstroPi

ap = AstroPi()
purple = (255, 0, 255)
ap.show_letter("J", purple)

while True:
      angles = ap.get_orientation_degrees()

      pitch = int(angles.get("pitch"))
      roll = (angles.get("roll"))

      if 45 <= pitch < 135 and 45 <= roll < 135:
            ap.set_rotation(r=90)
            print ("left")
      elif -135 <= pitch < -45 and 45 <= roll < 135:
            ap.set_rotation(r=270)
            print ("right")
      elif -45 <= pitch < 45 and 45 <= roll < 135:
            ap.set_rotation(r=0)
            print ("up")
      elif -45 <= pitch < 45 and -135 <= roll < -45:
            ap.set_rotation(r=180)
            print ("down")

      time.sleep(0.1)
```