

5G智能物联网

Aidlux 下完整定位案例

广和通大学计划项目组

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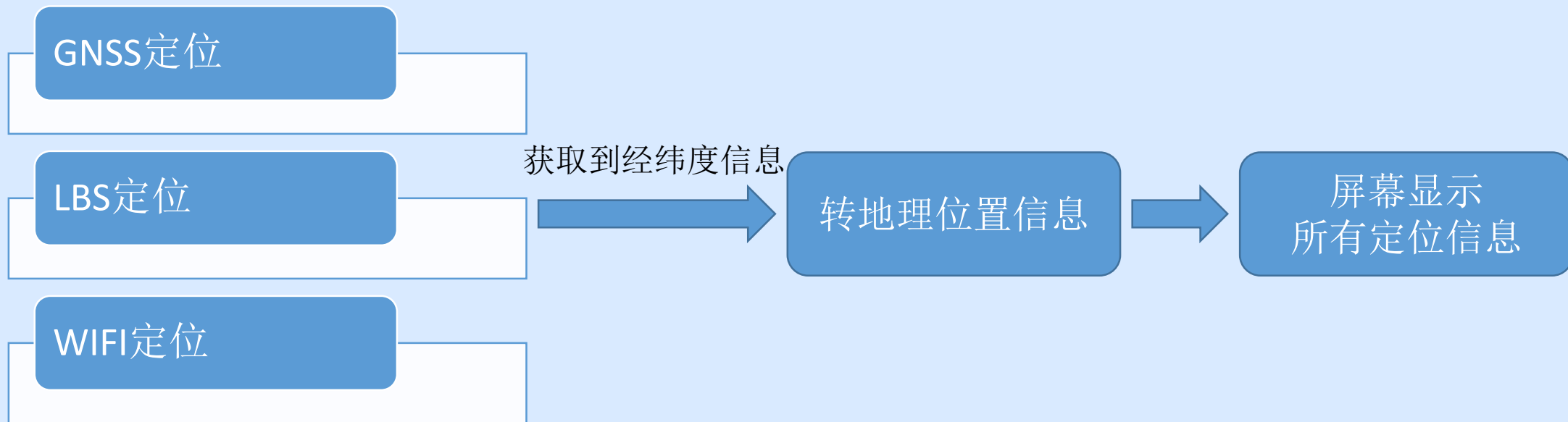
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1

定位案例的构建流程

定位案例的构建流程



2

GNSS定位

GNSS定位

调用安卓定位服务接口实现GNSS定位

```
import android
import datetime

droid=android.Android()
droid.startLocating(10000,30)
#print(droid.readLocation())
droid.stopLocating()
LKlocation = droid.getLastKnownLocation()
print(LKlocation)
gpslocation = LKlocation.result
#print(gpslocation)
#print(type(gpslocation))
gps = gpslocation.get('gps')
print(gps)
```

GNSS定位

提取经纬度等其他GNSS信息

```
latitude = gps.get('latitude')
longitude = gps.get('longitude')
altitude = gps.get('altitude')
time = gps.get('time')
date_format = "%Y-%m-%d %H:%M:%S" # 设置日期格式
# 将时间戳除以1000得到秒数
seconds = time / 1000.0
# 创建datetime对象并进行格式化输出
dt = datetime.datetime.fromtimestamp(seconds)
formatted_date = dt.strftime(date_format)
accuracy = gps.get('accuracy')
speed = gps.get('speed')
bearing = gps.get('bearing')
```

GNSS定位

GNSS定位结果

```
sh-5.0# /bin/python3 /home/location/gnss_location.py  
latitude:22.57673404  
longitude:113.94032469  
altitude:-7.66497802734375  
time:2024-01-22 17:41:02  
accuracy:28.067626953125  
speed:0  
bearing:0
```


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LBS定位

LBS定位

调用安卓服务接口获取基站信息
MCC、MNC、LAC、CID

```
import android
import requests
# 创建与Android设备连接的对象
droid = android.Android()
# 获取运营商编号
operator_code = droid.getNetworkOperator()
#print(operator_code)
MCCMNC = operator_code.result
if MCCMNC != "":
    print(MCCMNC)
    print(type(MCCMNC))
    MCC = MCCMNC[:3]
    MNC = MCCMNC[-2:]
    print("MCC:"+MCC)
    print("MNC:"+MNC)
    CellLocation = droid.getCellLocation()
    LACCID = CellLocation.result
    LAC = LACCID['lac']
    CID = LACCID['cid']
```

LBS定位

通过刚刚查询到的MCC、MNC、LAC、CID数据，在基站定位免费查询接口 <http://www.cellocation.com/api/>中即可以查询到基站定位经纬度信息与地理位置信息
详细代码见下页



LBS定位

```
#连接到基站定位接口
data = {
    'mcc': MCC,
    'mnc': MNC,
    'lac':str(LAC),
    'ci':str(CID)
}
response = requests.get("http://api.cellocation.com:84/cell/get", params=data)
print(response.text)
result = response.text.replace("{", "")
result = result.replace("}", "")
result = result.split(",")
lat = result[1][9:-1]
lon = result[2][9:-1]
address = result[4][13:-1]
print(lat)
print(lon)
print(address)
```

激活 Windows

LBS定位

LBS定位结果

```
sh-5.0# /bin/python3 /home/location/lbs_location.py
```

```
MCC:460
```

```
MCC:00
```

```
LAC:9343
```

```
CID:225027395
```

```
22.575864
```

```
113.942298
```

```
广东省深圳市南山区西丽街道文光村33-1-2号;石鼓路与打石一路路口西北129米
```

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WIFI定位

WIFI定位

使用Geocoder库来实现地理编码服务，调用网络查询经纬度信息

```
import geocoder

def get_coordinates_by_geocoder():
    g = geocoder.ip('me')
    return (g.lat, g.lng)

longitude = get_coordinates_by_geocoder()[1]
latitude = get_coordinates_by_geocoder()[0]
print(longitude)
print(latitude)
#print(get_coordinates_by_geocoder())
```

WIFI定位

WIFI定位结果

```
sh-5.0# /bin/python3 /home/location/wifi_location.py  
latitude:22.5455  
longitude:114.0683
```


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经纬度信息转地理位置信息

经纬度信息转地理位置信息

调用高德地图API获取地理信息

高德地图逆编码教程: <https://lbs.amap.com/api/webservice/guide/api/georegeo>

```
import requests
from gss_location import longitude, latitude

def geocode(location):
    # 参数内容 可以写成字典的格式
    parameters = {'output': 'json', 'key': '33e1bce41f85b8969f71e66132b35a43', 'location': location, 'extensions': 'all'}
    # 问号以前的内容
    base = 'http://restapi.amap.com/v3/geocode/regeo'
    response = requests.get(base, parameters)
    #print('HTTP 请求的状态: %s' % response.status_code)
    return response.json()
```

经纬度信息转地理位置信息

输入经纬度信息，输出地理位置信息

```
#loc = '113.5629337,22.3435249'  
if longitude == "NA":  
    formatted_address = "NA"  
    print(formatted_address)  
else:  
    loc = str(longitude) + ',' + str(latitude)  
    data = geocode(loc) # 获取的数据类型为dict  
    formatted_address = data['regeocode']['formatted_address']  
    print(formatted_address)
```

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屏幕显示定位信息

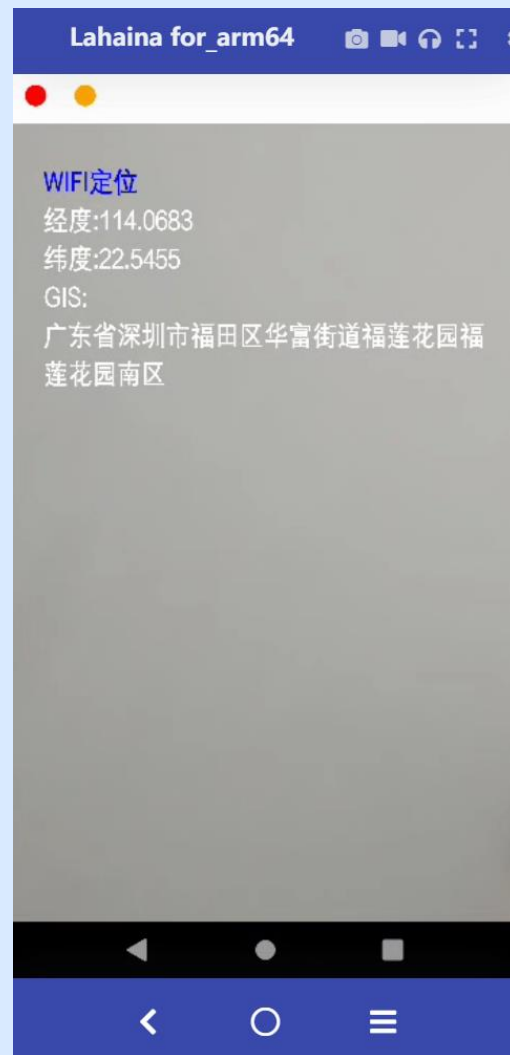
屏幕显示定位信息

通过以下函数，将定位的文本信息显示到屏幕上

```
def cv2ImgAddText(img, text, left, top, textColor=(255, 255, 255), textSize=20):  
    if (isinstance(img, np.ndarray)): # 判断是否OpenCV图片类型  
        img = Image.fromarray(cv2.cvtColor(img, cv2.COLOR_BGR2RGB))  
    # 创建一个可以在给定图像上绘图的对象  
    draw = ImageDraw.Draw(img)  
    # 字体的格式  
    fontStyle = ImageFont.truetype(  
        "FZCuDengXian.ttf", textSize, encoding="utf-8")  
    # 绘制文本  
    draw.text((left, top), text, textColor, font=fontStyle)  
    # 转换回OpenCV格式  
    return cv2.cvtColor(np.asarray(img), cv2.COLOR_RGB2BGR)
```

屏幕显示定位信息

显示最终效果



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完整定位案例代码

完整定位案例代码

完整工程链接：<https://pan.baidu.com/s/1ghwubAnZefxvIDuSIbtZQw?pwd=476q>

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深圳市广和通无线股份有限公司



☎ 0755-26733555

🏢 深圳市南山区西丽街道打石一路深圳国际创新谷六栋A座10-14层

🌐 www.fibocom.com

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