API Reference

Park in Peace

API Version: 1.0.0

This API aggregates data from LTA, URA, and data.gov.sg in order to provide a unified data source for the majority of the public car parks available within Singapore.

Park in Peace provides the ability to query carparks near any location within Singapore, retrieve their associated metadata, and provide vacancy and capacity information in **real time**. Additionally, Park in Peace also supports returning the trip's travel time and travel distance by using Mapbox. This information is then used to predict the expected vacancy at the user's time of arrival.

Furthermore, Park in Peace supports subscriptions to notify clients about changes in carpark vacancy. When the desired carpark becomes full, the server will send a push notification to downstream clients via Firebase.

Lastly, most government agencies in Singapore returns their data in the SVY21/EPSG:3414 coordinate system. Unfortunately, this is incompatible with majority of applications that adopt WGS84/EPSG:4326 coordinate system. Park in Peace has also adopted WGS84 coordinate system to be compatible with its ecosystem and seamlessly translates all SVY21 coordinates into WSG84 via OneMap.

This project would not have been possible without the datasets made available by Singapore Open Data initiative. Please refer to https://beta.data.gov.sg/open-data-license for terms of use regarding the Singapore Open Data Licence.

INDEX

API

1. CAR PARK

Fetch information related to car parks

1.1 `GET /api/v1/carpark/{id}`

Get basic information about a car park

Get basic information about a car park, e.g. name, address, coordinates, pricing, etc.

REQUEST

PATH PARAMETERS

NAME	TYPE	DESCRIPTION
*id	string	ID of the car park ("01HENGJMCHEP3QJMWRD9M46ZQE")

RESPONSE

STATUS CODE - 200: successful operation

RESPONSE MODEL - application/json

```
{
  id                string       ID of the car park ("01HENGJMCN7G2GJPZZMTYPZB5A")
  ref               string       Denotes the responsible authority for the car park and the ID assigned by the authority
                                 ("ura/R0039")
  name              string       Name of the car park ("RANGOON LANE")
  address           string       Address of the car park ("8 RANGOON LANE SINGAPORE 218504")
  epsg4326          string       Location of the car park in ISO6709+EPSG:4326 format
                                 ("+01.3165217+103.8539446/")
  lots
    ANY OF
    OPTION 1{
      vehicleType  enum      ALLOWED:pip.vehicle_type/car, pip.vehicle_type/
                             motorcycle, pip.vehicle_type/heavy_vehicle
                             Vehicle type that this lot supports
      chargeType   enum      ALLOWED:pip.charge_type/weekday, pip.charge_type/
                             saturday, pip.charge_type/sunday_ph
                             This pricing information only applies when today matches the chargeType indicated.
      startTime    integer   Time of day when this pricing information applies. In minutes since midnight (510)
      endTime      integer   Time of day when this pricing information ceases to apply. In minutes since midnight
                             (1020)
      rate         integer   Fare for using the lot. In cents (60)
      minDuration  integer   Duration until next payment. In minutes (30)
      capacity     integer   Total capacity for this vehicle type (24)
      system       enum      ALLOWED:pip.parking_system/coupon, pip.parking_system/
                             electronic
                             Parking system adopted by the car park
    }
  features          [enum]       ALLOWED:pip.features/vehicle_washing, pip.features/
                                 electric_charging
                                 features that the car park supports
  hash            string        Hash of the car park that can be used to determine if the car park information was
                                 updated
}
```

STATUS CODE - 404: Car Park ID does not exist

RESPONSE MODEL - text/plain

```
string
```

1.2 `POST /api/v1/carpark/{id}`

Get realtime information about a car park

Get realtime information about a car park, e.g. current vacancy and predicted vacancy etc

REQUEST

PATH PARAMETERS

NAME	TYPE	DESCRIPTION
*id	string	ID of the car park ("01HENGJMCHEP3QJMWRD9M46ZQE")

QUERY PARAMETERS

NAME	TYPE	DESCRIPTION
origin	coordinates	Starting location, used to compute travelling time, in ISO6709+EPSG:4326 format ("+01.3722655+103.8288232/")
full	boolean	Whether basic information should be included in the response (false)

RESPONSE

STATUS CODE - 200: successful operation

RESPONSE MODEL - application/json

```
{
  id                 string          ID of the car park ("01HENGJMCN7G2GJPZZMTYPZB5A")
  info {
    id               string        ID of the car park ("01HENGJMCN7G2GJPZZMTYPZB5A")
    ref              string        Denotes the responsible authority for the car park and the ID assigned by the authority
                                   ("ura/R0039")
    name             string        Name of the car park ("RANGOON LANE")
    address          string        Address of the car park ("8 RANGOON LANE SINGAPORE 218504")
    epsg4326         string        Location of the car park in ISO6709+EPSG:4326 format ("+01.3165217+103.8539446/")
    lots
      ANY OF
      OPTION 1{
        vehicleType  enum      ALLOWED:pip.vehicle_type/car, pip.vehicle_type/
                               motorcycle, pip.vehicle_type/heavy_vehicle
                               Vehicle type that this lot supports
        chargeType   enum      ALLOWED:pip.charge_type/weekday, pip.charge_type/
                               saturday, pip.charge_type/sunday_ph
                               This pricing information only applies when today matches the chargeType indicated.
        startTime    integer   Time of day when this pricing information applies. In minutes since midnight (510)
        endTime      integer   Time of day when this pricing information ceases to apply. In minutes since midnight (1020)
        rate         integer   Fare for using the lot. In cents (60)
        minDuration  integer  Duration until next payment. In minutes (30)
        capacity     integer  Total capacity for this vehicle type (24)
        system       enum     ALLOWED:pip.parking_system/coupon, pip.parking_system/
                              electronic
                              Parking system adopted by the car park
      }
    features        [enum]      ALLOWED:pip.features/vehicle_washing, pip.features/
                                electric_charging
                                features that the car park supports
    hash            string      Hash of the car park that can be used to determine if the car park information was
                                updated
  }
  origin            string        Location where the trip is starting from ("+01.3722655+103.8288232/")
  distance          integer       Driving distance to reach the car park, in metres (24000)
  travelTime        integer       Travelling time to reach the car park, in minutes (24)
  lots {
    pip.vehicle_type/car {
      c  integer  Current vacancy
      p  integer  Predicted vacancy
    }
    pip.vehicle_type/motorcycle {
      c  integer  Current vacancy
      p  integer  Predicted vacancy
    }
    pip.vehicle_type/heavy_vehicle {
      c  integer  Current vacancy
      p  integer  Predicted vacancy
    }
  }
  asof              string        Timestamp indicating the last update of the availability information retrieved
                                  ("2023-11-08T14:16:00Z")
}
```

STATUS CODE - 404: Car Park ID does not exist

RESPONSE MODEL - text/plain

`string`

1.3 POST /api/v1/carpark/nearby

Query nearby car parks

Query all car parks within a set distance from a given location, optionally returning the estimated travel time and travelling distance

REQUEST

QUERY PARAMETERS

NAME	TYPE	DESCRIPTION
*location	coordinates	Coordinates of the intended location to search for close car parks, in ISO6709+EPSG:4326 format ("+01.3180114+103.8624013/")
searchRadius	int64	Maximum tolerable distance to search, in metres (500)
page	int64	Page to return (15)
full	boolean	Whether to include basic information of the car park, e.g. total capacity, price, features, etc. (false)

NAME	TYPE	DESCRIPTION
origin	coordinates	Starting location of the user, before the user starts the trip, which will be used to compute travelling time ("+01.3722655+103.8288232/")

RESPONSE

STATUS CODE - 200: successful operation

RESPONSE MODEL - application/json

```
{
  page                  integer        Current page number
  numPages              integer        Total number of pages
  found                 integer        Total number of results
  results
    ANY OF
    OPTION 1{
      id              string        ID of the car park ("01HENGJMCN7G2GJPZZMTYPZB5A")
      info {
        id            string      ID of the car park ("01HENGJMCN7G2GJPZZMTYPZB5A")
        ref           string      Denotes the responsible authority for the car park and the ID assigned by the
                                  authority ("ura/R0039")
        name          string      Name of the car park ("RANGOON LANE")
        address       string      Address of the car park ("8 RANGOON LANE SINGAPORE 218504")
        epsg4326      string      Location of the car park in ISO6709+EPSG:4326 format
                                  ("+01.3165217+103.8539446/")
        lots
          ANY OF
          OPTION 1{
            vehicleType  enum     ALLOWED:pip.vehicle_type/car, pip.vehicle_type/
                                  motorcycle, pip.vehicle_type/heavy_vehicle
                                  Vehicle type that this lot supports
            chargeType   enum     ALLOWED:pip.charge_type/weekday, pip.charge_type/
                                  saturday, pip.charge_type/sunday_ph
                                  This pricing information only applies when today matches the chargeType indicated.
            startTime    integer  Time of day when this pricing information applies. In minutes since midnight (510)
            endTime      integer  Time of day when this pricing information ceases to apply. In minutes since midnight
                                  (1020)
            rate         integer  Fare for using the lot. In cents (60)
            minDuration  integer  Duration until next payment. In minutes (30)
            capacity     integer  Total capacity for this vehicle type (24)
            system       enum     ALLOWED:pip.parking_system/coupon,
                                  pip.parking_system/electronic
                                  Parking system adopted by the car park
          }
        features      [enum]      ALLOWED:pip.features/vehicle_washing, pip.features/
                                  electric_charging
                                  features that the car park supports
        hash          string      Hash of the car park that can be used to determine if the car park information was
                                  updated
      }
      origin          string        Location where the trip is starting from ("+01.3722655+103.8288232/")
      distance        integer       Driving distance to reach the car park, in metres (24000)
      travelTime      integer       Travelling time to reach the car park, in minutes (24)
      lots {
        pip.vehicle_type/car {
          c  integer  Current vacancy
          p  integer  Predicted vacancy
        }
        pip.vehicle_type/motorcycle {
          c  integer  Current vacancy
          p  integer  Predicted vacancy
        }
        pip.vehicle_type/heavy_vehicle {
          c  integer  Current vacancy
          p  integer  Predicted vacancy
        }
      }
      asof            string          Timestamp indicating the last update of the availability information retrieved
                                      ("2023-11-08T14:16:00Z")
    }
  }
```

2. MISCELLANEOUS

2.1 GET /

Check whether the server is up and running

REQUEST

No request parameters

RESPONSE

STATUS CODE - 200: successful operation

RESPONSE MODEL - application/json

```
{
   result  boolean
}
```

3. MONITORING

Get updates about car park vacancy

3.1 POST /api/v1/carpark/{id}/subscribe

Receive notifications when a car park becomes full

REQUEST

PATH PARAMETERS

NAME	TYPE	DESCRIPTION
*id	string	ID of the car park ("01HENGJMCHEP3QJMWRD9M46ZQE")

RESPONSE

STATUS CODE - 200: successful operation

RESPONSE MODEL - application/json

```
{
   expires  string  Subscription will be auto-terminated after this time
}
```

STATUS CODE - 404: Car Park ID does not exist

RESPONSE MODEL - text/plain

```
string
```

3.2 POST /api/v1/unsubscribe

Stop receiving notifications about car parks

REQUEST

No request parameters

RESPONSE

STATUS CODE - 200: successful operation