



# Collecting Data from Foursquare API

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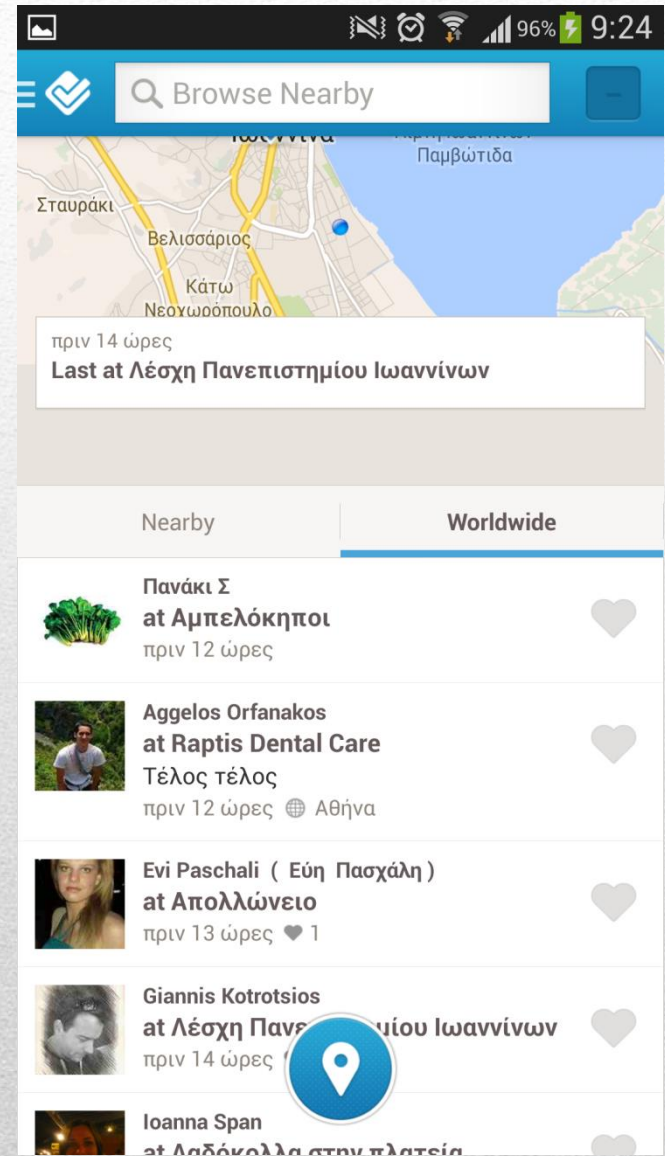
## ➤ Location-based Online Social Networks

- Applications which allow users to interact, share their locations, meet up, recommend places based on their physical location etc.
- LBSN's bridge the gap between online social networking and the physical world
- A smartphone or tablet with GPS is usually needed.



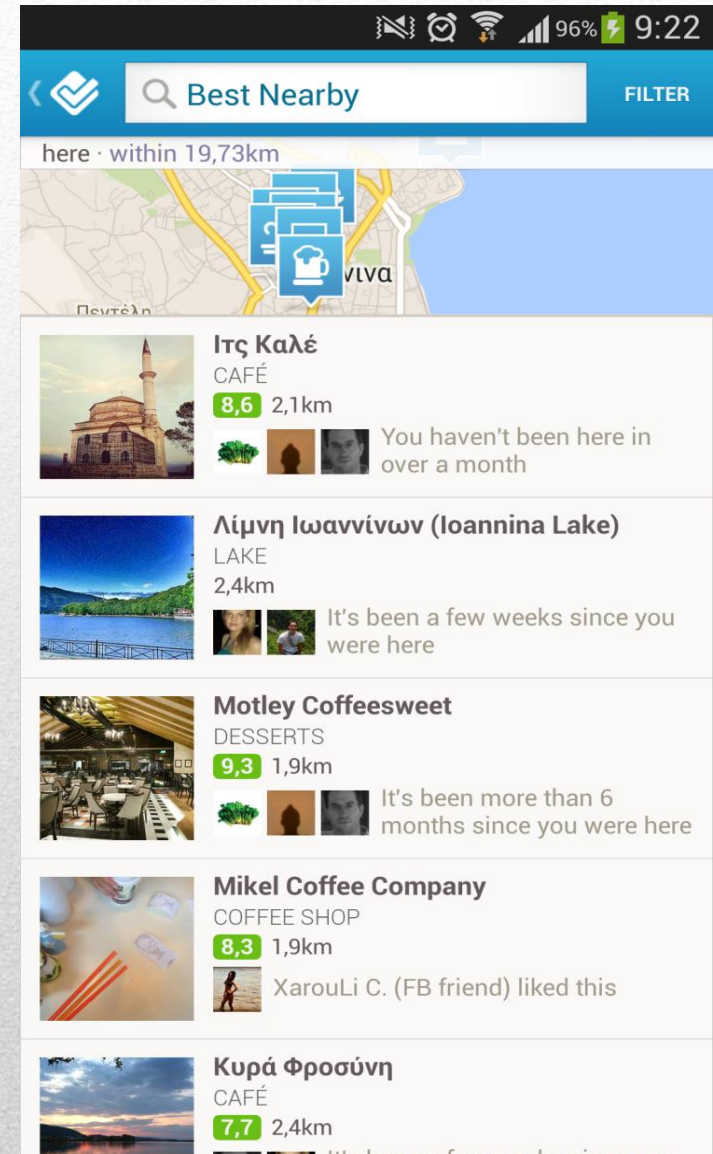
## ➤ About Foursquare

- Free Mobile and web application
- Connect with friends
- Check in to places you visit
- Leave tips and read other users' tips
- Explore new places
- Get deals
- Earn points, badges and mayorships
- Get personalized recommendations
- And many more...



## ➤ Foursquare in numbers

- Launched in 2009
- Over 40 million people worldwide
- Over 4.5 billion check-ins, with millions more every day
- Businesses: Over 1.5 million using the Merchant Platform
- Employees: Over 160



## ➤ Foursquare API

- Third-party applications can connect with Foursquare and extend the official application functionality
- Developers can get access and collect valuable data for analysis
- Some rate and content limits exist
- <https://developer.foursquare.com/>



## ➤ Types of Data that we can collect from Foursquare API

- **Users** (*friends, mayorships, tips, lists, photos, badges etc.*)
- **Venues** (*tips, stats, photos, likes, hours, events etc.*)
- **Tips** (*text, time and date, etc.*)
- and many more...

➤ Complete list of API endpoints available at:

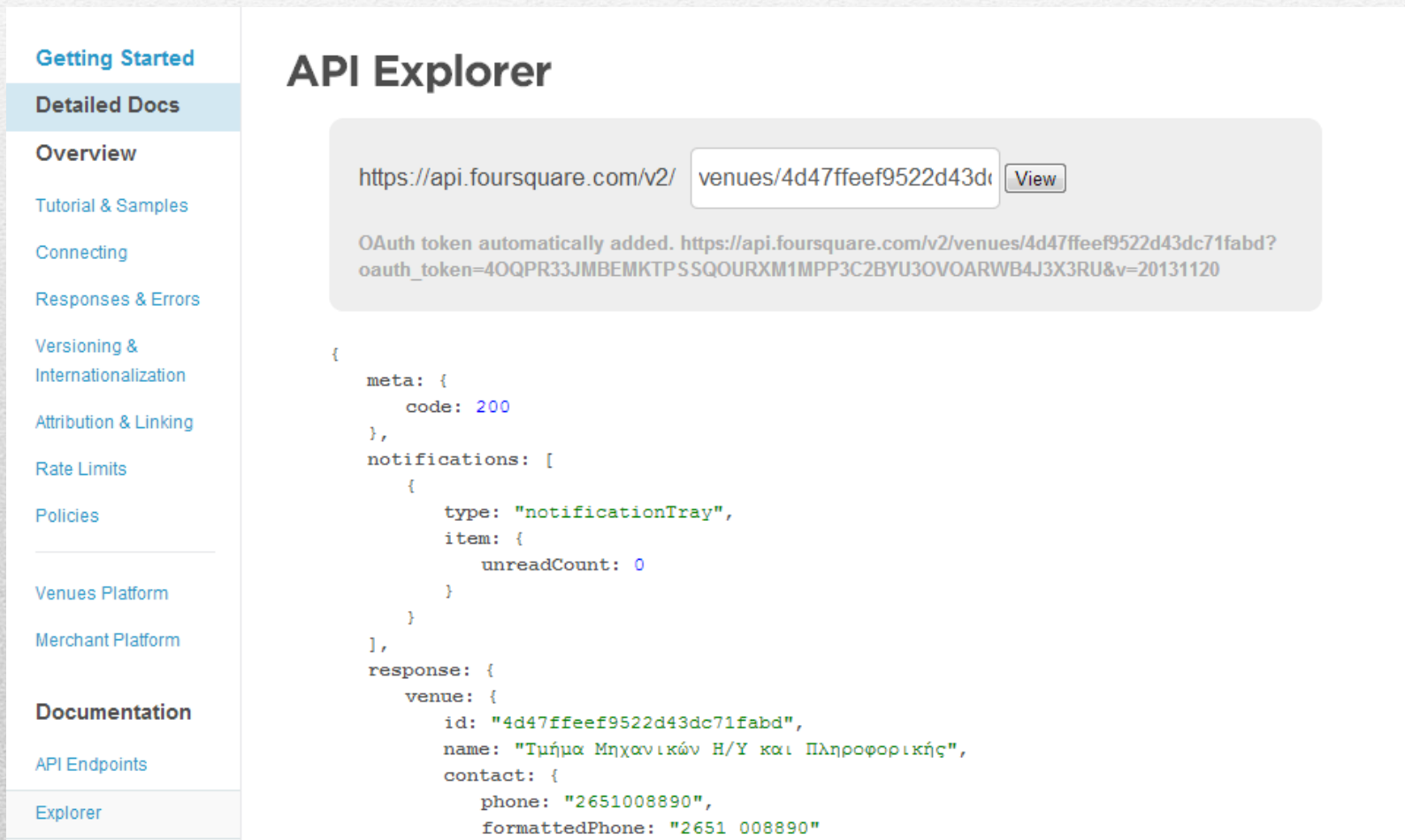
<https://developer.foursquare.com/docs/>

➤ There is also a **real-time API** available for venue managers

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## ➤ How to use the Foursquare API (web platform)

- Foursquare allows you to make requests through its web platform in order to get familiarized with the API, without complex steps such as user authentication.



The screenshot displays the Foursquare API Explorer interface. On the left is a navigation sidebar with categories like 'Getting Started', 'Detailed Docs', 'Overview', and 'Documentation'. The main area is titled 'API Explorer' and shows a request to the endpoint `https://api.foursquare.com/v2/venues/4d47ffeed9522d43dc71fabd?oauth_token=4OQPR33JMBEMKTPSSQOURXM1MPP3C2BYU3OVOARWB4J3X3RU&v=20131120`. A 'View' button is next to the URL. Below the URL, a message states: 'OAuth token automatically added. https://api.foursquare.com/v2/venues/4d47ffeed9522d43dc71fabd?oauth\_token=4OQPR33JMBEMKTPSSQOURXM1MPP3C2BYU3OVOARWB4J3X3RU&v=20131120'. The response is a JSON object:

```
{
  meta: {
    code: 200
  },
  notifications: [
    {
      type: "notificationTray",
      item: {
        unreadCount: 0
      }
    }
  ],
  response: {
    venue: {
      id: "4d47ffeed9522d43dc71fabd",
      name: "Τμήμα Μηχανικών Η/Υ και Πληροφορικής",
      contact: {
        phone: "2651008890",
        formattedPhone: "2651 008890"
      }
    }
  }
}
```

## ➤ Format of the returned results

- Results from Foursquare API are in **JSON** Format
  - **JavaScript Object Notation** uses human-readable text to transmit data objects consisting of attribute–value pairs.
  - Derived originally from the JavaScript scripting language but it is language-independent
  - Code for parsing and generating JSON data is available for a large variety of programming languages
-



## ➤ Example of returned result

```
response: {
  checkins: {
    count: 1252,
    items: [
      {
        id: "528c6e0b498ef0098de75a2d",
        createdAt: 1384934923,
        type: "checkin",
        isMayor: true,
        timeZoneOffset: 120,
        venue: {
          id: "4d47ffeef9522d43dc71fabd",
          name: "Τμήμα Μηχανικών Η/Υ και Πληροφορικής",
          contact: {
            phone: "2651008890",
            formattedPhone: "2651 008890"
          },
          location: {
            address: "Λεωφ. Σταύρου Νιάρχου",
            crossStreet: "Πανεπιστήμιο Ιωαννίνων",
            lat: 39.61797041130716,
            lng: 20.838661193847653,
            postalCode: "45110",
            cc: "GR",
            city: "Ιωάννινα",
            state: "Ηπειρος",
            country: "Greece"
          },
          categories: [
            {
              id: "4bf58dd8d48988d19f941735",
              name: "College Technology Building",
```

# ➤ Apigee – A web tool for easy accessing Foursquare and many more API's

apigee Providers API Resources Console Switch to... Sign up Sign in

API: Foursquare Service: https://api.foursquare.com/v/ Authentication: foursquare-AuthenticatedUser Feedback

Request URL: GET https://api.foursquare.com/v2/users/self?v=20120321 Send

Parameter	Value	Description	*Required
v*	20120321	All requests now accept a v=YYYYMMDD param, which indicates that the client is up to date as of the specified date. Sometimes we may need to make breaking changes to an API. Although we'll do everything possible to avoid this, when we do so we will use this parameter to give you time to transition to the new implementation. Requests to deprecated endpoints will return 200s, but they will also contain <code>errorType deprecated</code> in the meta section of the response. Clients that wish to be robust against changes should always pass <code>v=DATEVERIFIED</code> (in the YYYYMMDD format) and watch for any deprecated responses coming back from the server. We expect to allow at least several months for any transitions. Not passing the <code>v</code> parameter will currently return the oldest version of the API. In the future, the default will be to use the most recent API (instead of current default, which is to use the oldest API). Over time, we will phase out support for legacy behavior.	

Request

```
GET /v2/users/self?v=20120321&oauth_token=5PLGK0P13ARCZRKWIEULQVFE02LM4STKGINCUUBIB0 HTTP/1.1
X-HostCommonName: api.foursquare.com
Host: api.foursquare.com
X-Target-URI: https://api.foursquare.com
Connection: Keep-Alive
```

Response

```
{
  "response": {
    "user": {
      "id": "12587429",
      "firstName": "Giannis",
      "lastName": "Kotrotsios",
      "gender": "male",
      "relationship": "self",
      "photo": "https://is0.4sqi.net/userpix_thumbs/NDEH1TAFU5YE31NQ.jpg",
      "friends": [

```

## ➤ Foursquare API rate limitations

- 5.000 **userless** requests/hour (eg. Venues/explore)
- 500 **authenticated** requests/hour (eg. Users, tips)
- More details at: <https://developer.foursquare.com/overview/ratelimits>

## ➤ Foursquare API content limitations

- *Most important:* No access to users' check-ins (user/checkins endpoint can take only “self” parameter)
-

# ➤ How to create and register your own app

Your app name

SAVE CHANGES

Web addresses

Download / welcome page url

Your privacy policy url

Redirect URI(s)

Enter as many as you'd like, separated by commas. Like:

<https://www.foursquare.com>, <https://es.foursquare.com>, <https://fr.foursquare.com>..

Push API

Push API Notifications

App info

Short tagline

Detailed description

cs\_social

EDIT THIS APP

ADMINISTRATIVE INFORMATION

Owner

Giannis Kotrotsios

Client id

QF04LBPIHQMBMXZ5LG34SATJYTYSGMZILHSC1YYZCV...

Client secret

W2U2I5LSIKPO2OZVBRKFWP2QIEQ5JO5G0AMZ0ADZL...

WEB ADDRESSES

Download / welcome page url

Your privacy policy url

Redirect URI(s)

PUSH API

Push API Notifications

No checkins will be pushed to your app

APP INFO

Short tagline

None provided

Detailed description

## ➤ Libraries for connecting with Foursquare API

- Easy integration with API from many programming languages
  - Built-in OAuth2 support for easy authentication
  - Available for a large variety of languages such as:
    - Python, Ruby, PHP, Objective-C, JavaScript, .Net
    - Perl, Scala, Node.js, Grails, ActionScript etc.
  - Foursquare also provides native authentication libraries for Android and iOS
  - More details about available libraries:  
<https://developer.foursquare.com/resources/libraries>
-

## ➤ PyFoursquare

- Python open-source wrapper for Foursquare API
  - Created by Marcel Caraciolo for his master thesis
  - Built-in OAuth2 Authentication support
  - Easy parsing of results using Python's JSON library
  - Results are stored in Python's data structures such as lists and dictionaries
  - Currently supports the following endpoints but it is easy to add code and extend its functionality:
    - [venues](#), [venues/search](#), [venues/tips](#), [tips](#), [users](#), [users/friends](#), [users/checkins](#)
  - Download, installation and usage instructions at:
    - <https://github.com/marcelcaraciolo/foursquare>
    - <https://pypi.python.org/pypi/pyfoursquare>
-

## ➤ Pyfoursquare usage example

```
import pyfoursquare as foursquare
# == OAuth2 Authentication ==
#
# This mode of authentication is the required one for Foursquare

# The client id and client secret can be found on your application's Details
# page located at https://foursquare.com/oauth/
client_id = ""
client_secret = ""
callback = ''

auth = foursquare.OauthHandler(client_id, client_secret, callback)


#First Redirect the user who wish to authenticate to.
#It will be create the authorization url for your app
auth_url = auth.get_authorization_url()
print 'Please authorize: ' + auth_url

#If the user accepts, it will be redirected back
#to your registered REDIRECT_URI.
#It will give you a code as
#https://YOUR_REGISTERED_REDIRECT_URI/?code=CODE
code = raw_input('The code: ').strip()

#Now your server will make a request for
#the access token. You can save this
#for future access for your app for this user
access_token = auth.get_access_token(code)
print 'Your access token is ' + access_token
```

## ➤ Pyfoursquare usage example (user authorization)


```
Please authorize: https://foursquare.com/oauth2/authenticate?redirect_uri=http%3A%2F%2Fwww.cs.uoi.gr%2F%7Eikotrots%2Fcallback&response_type=code&client_id=QF04LBPIHQMBMXZ5LG34SATJYTYSGMZILHSC1YYZCWON5JBY
The code: [ ]
```

**cs\_social** 

[App Website](#) • [Privacy Policy](#)

Connecting this app will allow it to do certain things like create new check-ins on your behalf and access personal information such as your profile information, check-in history, friends list, tips and to-dos.

**Tip** If you change your mind at any time, you can disconnect it in your [settings](#)

 **Giannis** (Not you?) Deny **ALLOW**

```
www.cs.uoi.gr/~ikotrots/callback?code=CWDKNBJYURZ33MUF5NTVMDWXVNHFYZVYC1XYNDWWOQJ42W3U
```

```
Please authorize: https://foursquare.com/oauth2/authenticate?redirect_uri=http%3A%2F%2Fwww.cs.uoi.gr%2F%7Eikotrots%2Fcallback&response_type=code&client_id=QF04LBPIHQMBMXZ5LG34SATJYTYSGMZILHSC1YYZCWON5JBY
The code: CWDKNBJYURZ33MUF5NTVMDWXVNHFYZVYC1XYNDWWOQJ42W3U
Your access token is QKK4HHUYOATUMEN3FOKZN22PVNI21PM3B5UEXCM5VRHHE3V4
```



## ➤ Pyfoursquare usage example (making API calls)

```
#Now let's create an API
api = foursquare.API(auth)

#Now you can access the Foursquare API!
result = api.venues_search(query='Burburinho', ll='-8.063542,-34.872891')

#You can access as a Model
print dir(result[0])

#Access all its attributes
print result[0].name

"""
If you already have the access token for this user
you can go until lines 1- 13, and then get at
your database the access token for this user and
set the access token.

auth.set_access_token('ACCESS_TOKEN')

Now you can go on by the line 33.
```

## ➤ Some results from a previous year project

❖ Collected foursquare data for venues and users for Ioannina city area (January 2013)

❖ Some statistics:

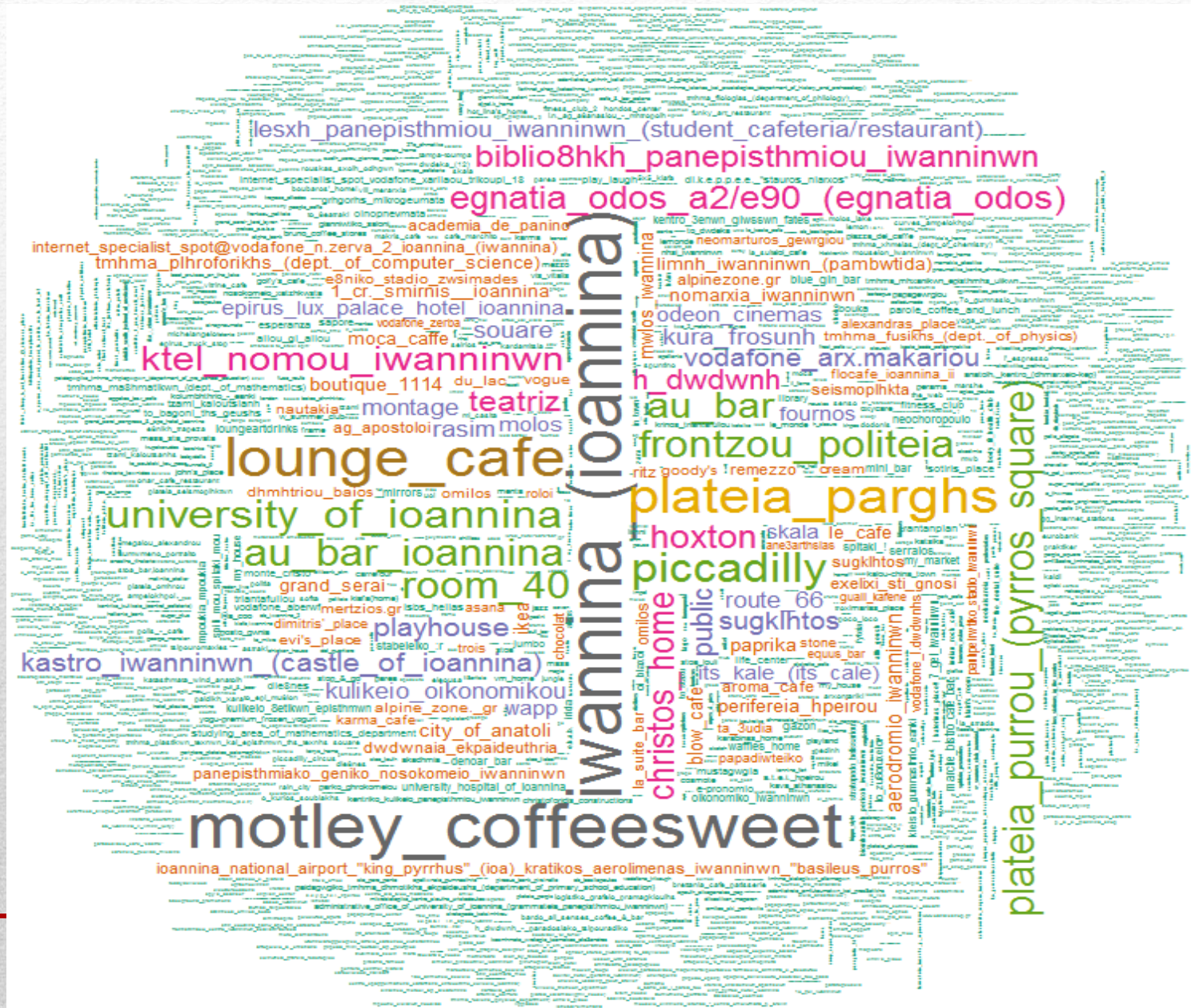
- Total venues collected: 2.023
  - Venues with mayor: 1.492
  - Number of different mayors: 422
  - Total check-ins: 106.277
  - Mayor friendship graph:
    - ✓ 358 nodes
    - ✓ 2.379 edges
    - ✓ 13,2 average degree
    - ✓ 0,383 average clustering coefficient
    - ✓ 3,146 average path length
    - ✓ Power-law with  $a=1,38$
-

## ➤ Some results from a previous year project

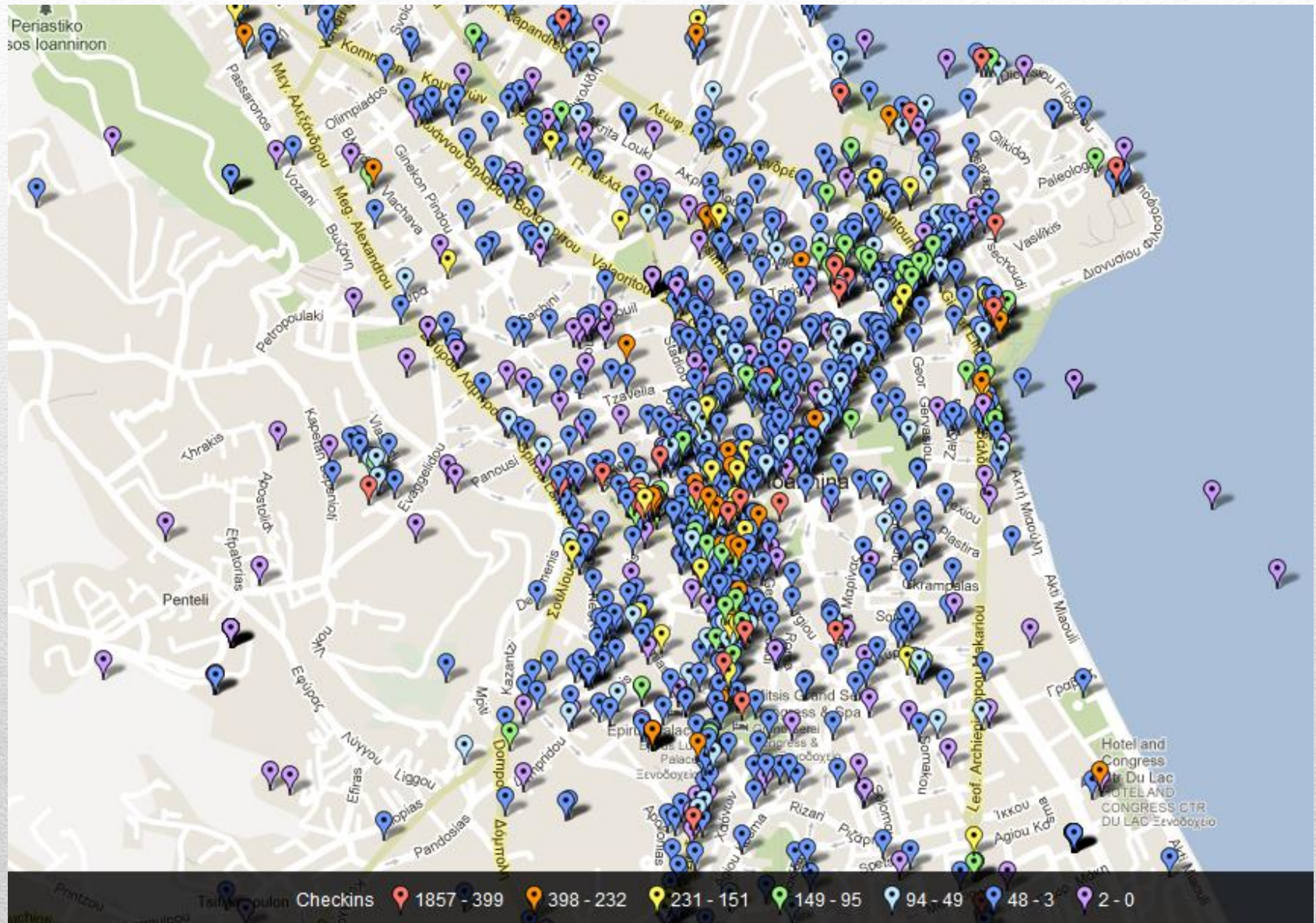
Κατηγορίες	Venues	Checkins
Buildings	414	14169
Education	119	8407
Nightlife	195	15372
Food	463	32489
Travel	85	5643
Parks and Outdoors	151	11875
Shops	362	10510
Arts and entertainment	110	3927



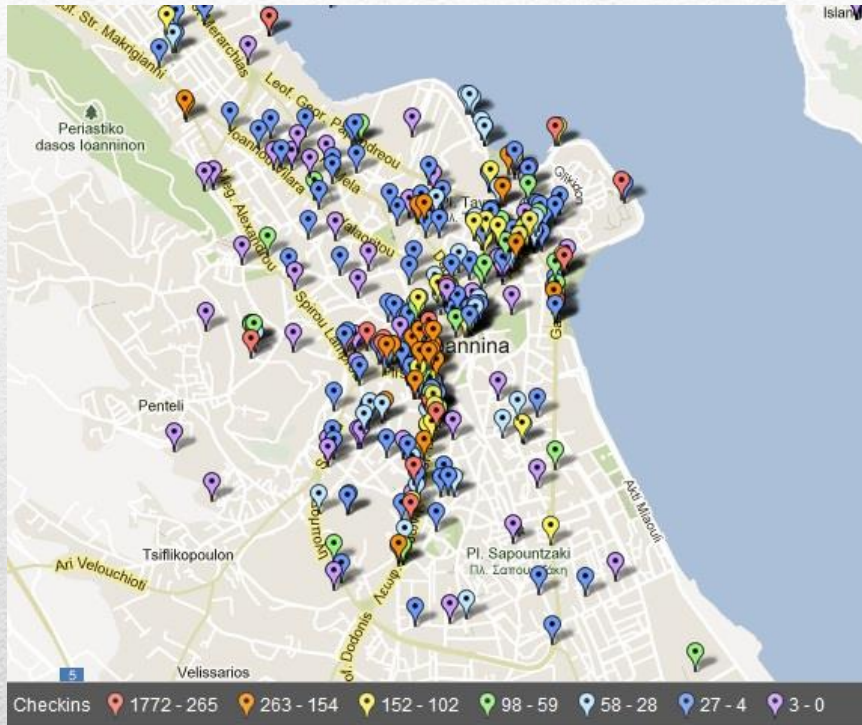
➤ Check-ins wordcloud



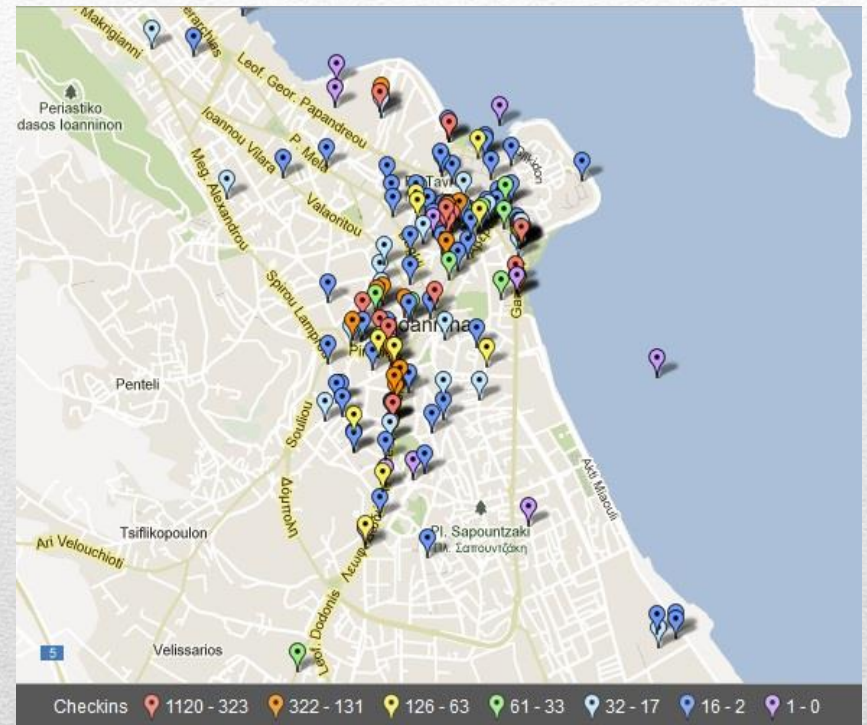
## ➤ Popular places in Town



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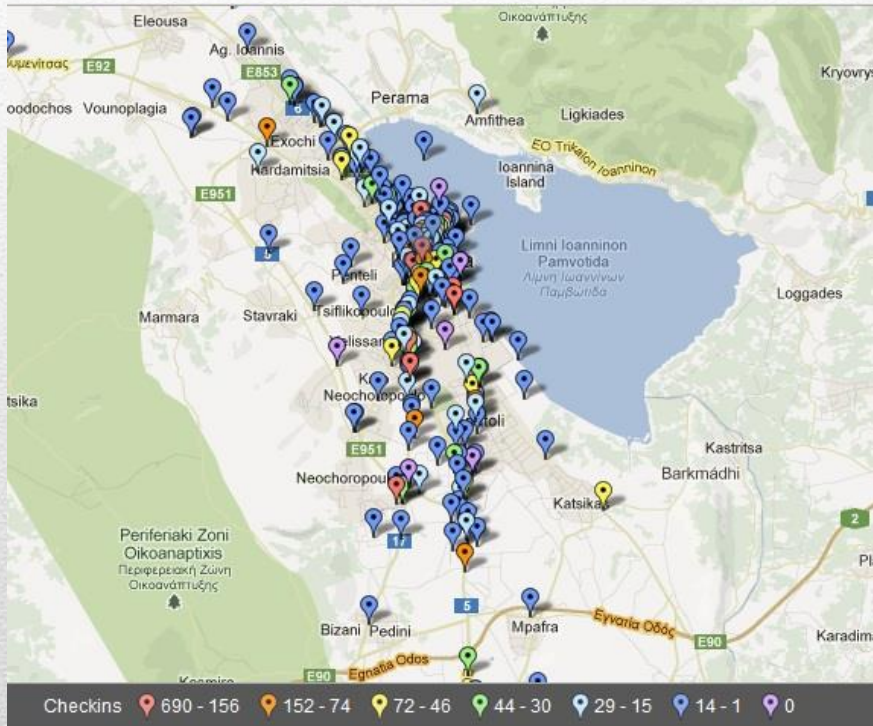


*Food category*

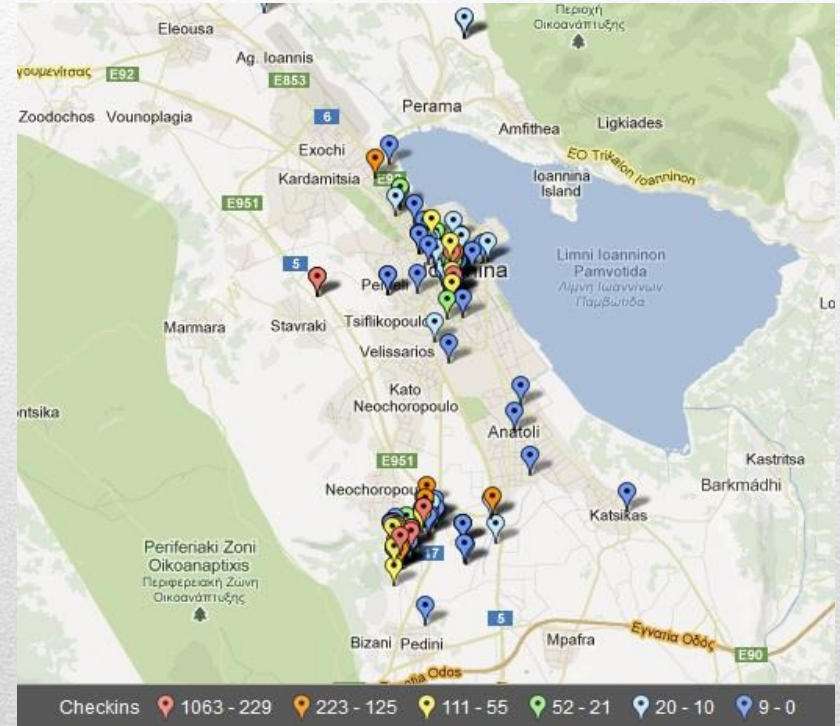


*Nightlife category*

## ➤ Popular places in Town



*Shops category*



*Education category*

Thank you!

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