

# A Way to Internet Collect Data, 'Related to a Specific Subject'. The Special Case: For Albanian Agritourism Users Data

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*Abstract:* - In this paper, we will present the way to collect the data related to agrotourism destinations (AGT) in Albania. In the last years, there has been an increase in their number. AGT in our country continuously uses various social media platforms, such as Facebook, Booking, Instagram, etc. there is a lot of data that is not centred, and often contradictory or even incorrect, and very scattered about these websites. This makes it difficult for interest groups (tourists, suppliers, etc.) to easily find information on different AGTs in Albania. What these AGT destinations have in common is that they put their location on Google Maps along with other details, such as business name, their website if they have one, booking methods, contact numbers, etc. Other real data such as the star ratings of visitors and their comments or other information are created and enriched over time. In this paper, we aim to have this information grouped and systematized in such a way that we can analyze and study them. Through this paper, we offer a solution by developing algorithms and scripts that will make it possible to collect and systematize data in a single database and systematically analyze such distributed data for Agrotourism in Albania.

*Key-Words:* - Agrotourism, social networks, information technology, Google Maps, data collection, data analysis.

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## 1 Introduction

During the last years, agrotourism in Albania has had a growing development and has increased the focus of institutions to improve this sector. Such destinations play an important role in the economic development of rural areas. This sector, in Albania, is very favored by climatic conditions, gastronomic culture, diversity of relief, virgin nature, etc. The economic importance of these points has increased the attention to promotion and expansion. Agrotourism destinations are not just tourist spots but constantly interact with visitors through social networks and various digital platforms, increasing in this way the cooperation between them. Despite the efforts in the promotion of these destinations, an important challenge comes from the distribution of information across different platforms and social networks, this distribution represents an obstacle to accessibility and comparability between them. The

non-existence of a platform with detailed information and as complete as possible for agrotourism where these points were grouped and to have a more accurate overview of the results as some of the neighboring countries have, as well as the lack of studies for Albania regarding this problem, prompted us to prepare this paper.

Recognizing these problems and knowing that each subject places its location on Google Maps to be easily found by interest groups (tourists, suppliers, etc.), we have found a way to get this information which includes essential details written directly by users like websites they use, contact numbers, ratings and visitor comments, etc. However, a large amount of data continues to be distributed across different social networks, giving us fragmented information. To fix this problem, this study presents the creation of algorithms and scripts to systematically collect and analyze distributed information. We will use an existing application to

collect the information found on social networks or other websites and we will create another application that will collect the information found on the Google Places Api site. We will have this data in our database to analyze later. The main objective is to centralize and simplify this information, thus providing accurate and up-to-date data on agrotourism in Albania. This not only provides access to information for current and potential visitors but also helps with valuable information to interested parties engaged in the development and management of these agrotourism destinations. This study will also contribute to the sustainable growth of agrotourism in Albania. Utilizing the power of digital platforms, the work envisages the creation of a unified and well-organized database. In the end, our research aims to create as much simplicity as possible for agrotourism stakeholders in Albania by providing updated digital information about agrotourism points in Albania which will help them in their decision-making.

## 2 Literature Review

In this section, we will present an analysis of several different research and scientific works related to the topic of the development of agrotourism, the digital platforms used in that field, and the collection of information in the rural environments where this activity takes place. Our special focus is Albania and finding and collecting information distributed, in a single database.

### 2.1 The Development of Agrotourism in Rural Places

The concept of AGT has received a lot of attention in the academic literature as a good opportunity to develop rural places. In papers [1] and [2], the various advantages of agrotourism are presented, starting from the diversification of the economy to the preservation of cultural heritage. The first paper focuses more on the long-term design of agrotourism stakeholders while second paper looks more at the impact of society and possible commercialization. Effective strategies for the promotion of agrotourism destinations must be developed.

### 2.2 Digital Platforms used in Tourism

The role of digital platforms in the tourism industry is widely studied. In the papers [3] and [4] the effects of information technology in tourism marketing are discussed. They also addressed the

importance of digital platforms in destination promotion and visitor engagement. Both agree on the very important role of information technology in the development of tourism. They show that by centralizing information they help tourists in decision-making and information security. Even though they agree on the importance of ICT, they express different opinions on its importance. The first thinks that ICT is more important for the tourism industry, improving efficiency, competition, and management, while the second emphasizes that ICT helps tourists more in obtaining information and making decisions.

### 2.3 Challenges of Fragmented Information

Studies on the challenges of fragmented information in tourism provide useful insights. The paper [5] explores the issues related to information distributed on different online platforms, emphasizing the need for centralized databases as an effective way to manage destinations. In the paper [6] it is shown that the information distributed in many sources negatively affects the decision-making of tourists as they cannot find all the complete information they need, also discussed the information distributed in social networks and the problems they bring while in first paper the same problem of information is dealt with, but they do not look at the problem of the information found in social networks. The second paper focuses more on the management of information located in social networks by systematizing and analyzing them while the first paper focuses more on creating databases to systematize information on tourist spots.

### 2.4 Community Involvement and User-generated Data

In papers [7] and [8], the importance of community involvement and user-generated data for destination marketing was addressed. They agree on the importance of information written by users, they also think that social interaction and community involvement through the data they create is necessary. Regarding information technology, the first paper focuses on the impact of user-generated data on tourism marketing and decision-making, while second paper shows more how information technology and user-generated data can enrich and personalize tourism experiences by fostering innovation. In the first paper, personalization in the tourist experience is not emphasized, while in second paper they see this as very important to meet the individual needs of travelers.

### 2.5 Digital Platforms and Data Collection

In the papers [9], [10], [11] it is discussed about the importance of digital platforms in the inclusion of visitors as well as in improving the development of agrotourism. They all agree that the collection and analysis of data helps to improve the quality of service to tourists. They also think that the centralization of information is needed so that the data can be managed easily. In the first paper, the problems that come from being a rural area and the lack of technological infrastructure and knowledge are highlighted, while in second paper the differentiation of digital levels between urban and rural areas is made to more efficiently implement e-tourism platforms. In the third paper the concern for privacy is presented and data fragmentation is suggested. In the first paper the inclusion of a wide range of digital technologies is suggested, introducing here also applications and social networks from where we will receive the necessary information for the development of agrotourism. In the second paper the use of technologies for e-tourism is further suggested while the third paper focuses on the use of these data and technologies for marketing.

Also, for a wider literature on issues related to agrotourism, see the papers, [12], [13], [14], [15], [16], [17], [18], [19], [20], where a variety of viewpoints and studies on this sector are presented.

### 3 Methodology

In order to collect the information that is on social networks and on Google Maps for the agrotourism points that are located in Albania, our methodology integrates two different methods for data collection. At first, we will use a data scraper to download in tabular form the various data entered by users and by the agrotourism businesses themselves in social networks or on various pages on Google. The data obtained will be their names, locations, websites if they have, user comments, ratings, etc. At the same time, we will build a web application that connects to the Google Places API for detailed data about addresses, contacts, web pages if they have them, ratings, comments, etc. This comes as a result of the fact that each of these agro-tourism points tries to be easily found by the interested parties by placing their location on Google Maps. This site has also attached other information on that point. Then, these data sets will be collected and systematized in a single database from where we will be able to make comparisons without any technical obstacles. We will make sure that we do not duplicate information

or receive wrong data. By periodically updating and comparing the data obtained from the processing of this database, useful results will be extracted to help in the study and decision-making processes of the stakeholders that will help in the sustainable development of agrotourism in Albania.

### 4 Data Collection of Agrotourism Destinations in Albania

In this section, we will present the two methods used to collect data written by agrotourism businesses and by customers located on social networks as well as on Google Maps. The data is checked for duplicates or deficiencies and added to our database. The useful data that we will extract are the names of these destinations, their location, comments, ratings, websites or social networks they use, etc. To accomplish this, we have used two ways: Using Instant Data Scraper and Building an application for receiving data from the API site.

#### 4.1 Using Instant Data Scraper

First, we need to install a data scraper as an extension in our Google Chrome browser. This application will allow us to download the data selected by us in tabular form in different formats such as csv, json, etc. on the website where we are located.

After installing the instant data scraper in our Google Chrome browser, we searched with the keyword "Agrotourizem Shqiperi". In the list of results, we selected "countries" and then clicked on the data scraper icon. The table shown in Figure 1 shows the presentation of the results.

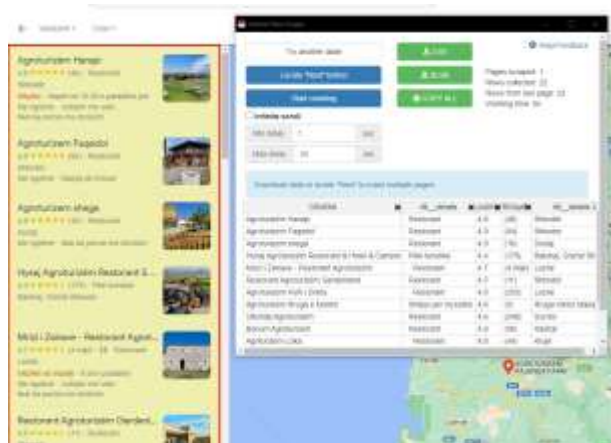


Fig. 1: Using data scraper

We change the table type until we reach the results that suit us. The results are the name of the agrotourism, the type of service, star ratings, the

total number of comments, the city where it is located, etc. These data can be downloaded in Excel or copied directly. We have saved them in Excel because we need them in tabular form to analyze later. We will follow the same procedure for booking and social networks. The results are presented in Figure 2, Figure 3 and Figure 4.

Since the Booking platform is one of the most used platforms for reservations, we are also presenting the data that the data scraper collects from this platform.

Figure 2 shows the data we receive from Booking. In the resulting table, we get the names of the agro-tourist points that are registered in the booking. Reciprocally with nominations we have comments, ratings, impressions of the location, etc. The data can be copied or in our case, we downloaded it in Excel.

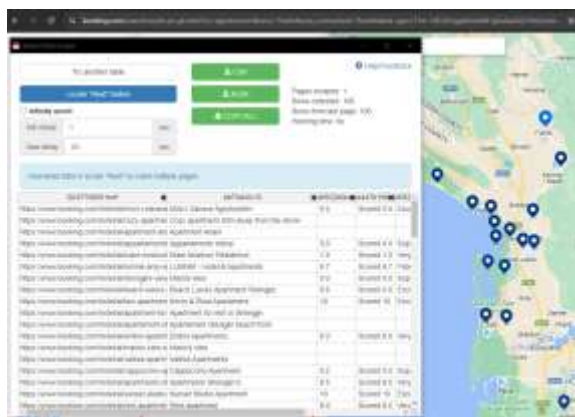


Fig. 2: Agrotourism data from booking

The Facebook social network is one of the most used networks by all age groups, everywhere in Albania. For this reason, many of the Albanian AGTs refer to this social network to advertise their business, and to interact with their clients. We are using a data scraper to collect data for some of the AGTs with information presented on Facebook, and specifically, in Figure 3, this data is presented.

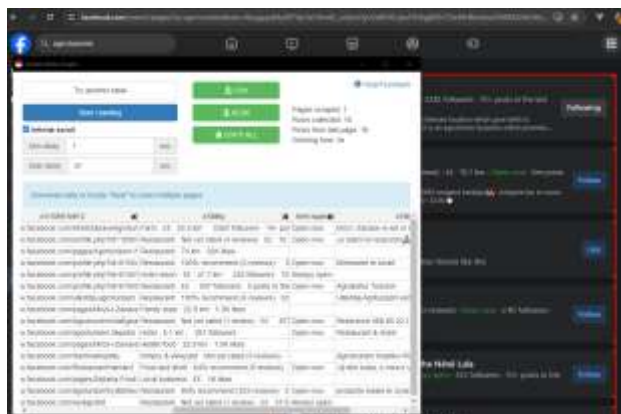


Fig. 3: Information obtained from Facebook

On Facebook, we search for agrotourism and a list of their profiles will be presented to us. Activate the data scraper, which will present in a table all the information that this social network has for them. Let's look at the presented names of destinations that have a Facebook profile, how many likes or follows they have there, how many comments, etc.

In Table 1, a part of the table in Excel is presented, which we obtained from the process that generated Figure 1 regarding the locations of AGTs. We now have this data ready to be checked for errors or overlaps and save it in our database. We will look at their uses below.

Table 1. Results obtained by data scraper

1	Emri i AGT	Lloji i shërbimit	Rate	Ni komenti/vendodhja	BIRDve	IF66
2	"Sirena" Agroturizëm	- Restorant	4,3	(169)	Golem	Me ngrënie
3	AGROTURIZEM PAJENGA FARM	- Fermë	4,7	(29)	Elbasan	
4	Agroturizem Kodra e Gjelbër	- Restorant	4,7	(100)	Berat	Me ngrënie
5	"Pema e Jeta's" Agroturizëm	- Fermë	4,4	(157)	Durrës	
6	Villa Bianca Agroturizmo & SPA	- Hotel	4,5	(97)	Rivë	
7	Agroturizem Eldi	- Restorant	4,7	(43)	Durrës	Me ngrënie
8	Aromë Natyja Agroturizëm & Hotel	- Restorant	4,6	(11)	Durrës	Me ngrënie
9	Agroturizem	- Hotel	4,2	(96)	Shkallë	
10	Agroturizem Gjeçali	- Shërbim	4,6	(434)	Shijak	
11	Agroturizem Devin	- Shërbim	5,0	(8)	Durrës	
12	Agroturizem Via Egnatia	- Restorant	4,4	(78)	Korinë	Me ngrënie
13	Bar Restorant Barishi Agroturizem	- Restorant	4,5	(451)	Krujë	Me ngrënie
14	Agroturizem Byllë	- Pkë turiz	4,8	(71)	Ballsh	
15	Farma Sotira	- Shërbim	4,4	(722)	Leskovik	
16	Agroturizem Xhoni Leti	- Restorant			Çerkezë-M	Me ngrënie
17	Agroturizem Agabem	- Fermë			Ballsh	
18	Agroturizem Kantina Kopluku	- Punishte	4,8	(12)	Koplik	
19	Cassar Cantina	- Punishte	4,8	(27)	Kashar	
20	Ferma Rrezja Diefit	- Restorant	5,0	(14)	Kënaqë	Me ngrënie
21	Dybelli Agroturizëm	- Hotel			10 km from	

Similarly, we can generate complete Tables, with data for each platform.

We can also use data scrapers for other platforms, such as Instagram, Twitter, LinkedIn, etc.

#### 4.2 Building and using a Web Application to Retrieve Data from the API Site

A challenging goal for us is the building of a web application that would be useful for our case. With this application, we will get all the information about the agrotourism points in Albania which are located in the places API. We will add this data to our database and also from this data we can display them on the application interface (Figure 2). In the application we have built, we can request the agrotourism points located around a city to be displayed. We want to illustrate with photos, comments, and ratings received in real-time from the place API.

First, we have built a query that we send to Google Places API to bring us all the IDs of agrotourism businesses in Albania. These IDs are unique text that represents a point registered in Google. To make cooperation with Google possible, we have created an account from which we got our code to be able to continue sending requests to the API platform. We have marked this personal code with

'ourGoogleApiKey' in the code below because it is personal.

```
const apiKey = 'ourGoogleApiKey'; const apiUrl =
'https://maps.googleapis.com/maps/api/place/textsearch/
h/json';
const searchQuery = 'agrotourism Albania';
const fetchAgrotourismPlaces = async () => {
  try { const response = await fetch(`${apiUrl}
?query=${encodeURIComponent(searchQuery)}&key=
${apiKey}`); const data = await response.json();
if (data.status === 'OK') {
const agrotourismPlaces = data.results;
const placeIds = agrotourismPlaces.map(place =>
place.place_id);
console.log('Agrotourism Place IDs:', placeIds); }
else { console.error('Error fetching data from Google
Places API:', data.status); } } catch (error) {
console.error('Error fetching data:', error); } };
fetchAgrotourismPlaces();
```

Below we have presented all the IDs that Google gives us for each of the agrotourism points. With these IDs, they are registered in Google Maps, and through them, we can get all the other necessary information:

```
{"Agroturizëm
Harapi": "ChIJB_CgejwDThMRtwAeWABwRmA",
"Agroturizem Faqedol":
"ChIJneZJ6C0BThMRuDn3uMOQfMI",
"Agroturizem shega":
"ChIJ09QzrAAFThMRqN7EY0EAgsA",
"Mrizi i Zanave - Restorant Agroturizëm":
"ChIJZ1msF5rkURMR1mv-ndiy5Sk",
"Hysaj Agroturizëm Restorant & Hotel &
Camping": "ChIJTfZdxe79TRMR8xgb1KoWCgg",
"Restorant Agroturizëm Gardenland":
"ChIJjaw5uzEdThMRNKGadqcU9XY",
"Agroturizëm Hylli i Dritës":
"ChIJ60fCDVnkURMRDMLISKP9IWE",
"Ullishtja Agroturizëm":
"ChIJ_6oztHnbTxMRmn95pUIRg40",
"Agroturizëm Rruga e Mullirit": "ChIJwbgBF-
j5TRMR0PvomAO9KWM",
"Bonum Agroturizem": "ChIJM-
kxR5EvUBMREXBWlZEGIO4",
"Agroturizem Loka":
"ChIJLy6eSkgrUBMRPZRPhq2mhjw",
"Agroturizem Marku":
"ChIJmTVQXLL_URMR0LQ-MjGBNko",
"Nëna Dashuri Agroturizëm":
"ChIJBe6KHvxzURMR7TYdN7XJt7w",
"Lahuta e Vjetër Agroturizëm":
"ChIJ5WcU27rbURMRHYXqasr8vy8",
"KRONOS AGROTURIZEM":
"ChIJUX3UBDcpUBMRDO0VdDTINfs",
"Alpeta Agrotourism & Winery (Alpeta
Agroturizem)":
"ChIJq6qqquoGeWhMRElpOwVzp0nM",
"Agroturizëm Ndryshe":
"ChIJ1xPI5C61URMRuITXJ1GWDik",
```

```
"Agroturizëm Lugina e Agrumeve": "ChIJe-
Emjh5vWxMR1I-000rSv8Q",
"FAMA - Agroturizem & Argetim":
"ChIJbbD4XEfbTxMR37pNRgELq3E",
"Sirena Agroturizëm": "ChIJOcRISTzfTxMR7B-lc-
XJmMI",
"AGROTURIZEM PAJENGA FARM":
"ChIJf5O0_yRBUBMRlsYrQn8gS9I",
"Pema e Jetës Agroturizëm":
"ChIJG_CqwFjYTxMRILpFGlq2BnA",
"Agroturizëm Kodra e Gjelbër":
"ChIJQ5zIxCifWhMRsApkRMEH_3E",
"Agroturizem":
"ChIJ6ZVkv_v7ZTxMRj9P33DOVqO0",
"Villa Bianca Agriturismo & SPA": "ChIJf-
T2CZopUBMRGa89DcgOYbs",
"Aromë Natyre Agroturizëm & Hotel":
"ChIJ98arTsQrThMR81bW2qhWLjE",
"Agroturizëm Eldi":
"ChIJY1Nnj0xFRRMRCzRvBzYaOHs",
"Agroturizem Gjepali":
"ChIJY_GcKNPXTxMR97Z9TIXopAg",
"Agroturizëm Via Egnatia":
"ChIJO_M4yYQbUBMR_mB15L6XioQ",
"Bar Restorant Bardhi Agroturizem":
"ChIJOd85eNDNURMROzCAH8Vjw-E",
"Agroturizëm Bylis": "ChIJS-
LmTM63WhMRnRiCy02nW1g",
"Farma Sotira":
"ChIJQVZkrEBGWhMRf11DxkBT0E0",
"Agroturizem Xhon Leti":
"ChIJ1x6DYxgzUBMRrohjVVBEall",
"Agroturizëm Agabeu":
"ChIJ6QKwboe7WhMRWFZuT2dJVSE",
"Agroturizëm Cantina Cassar":
"ChIJYWYMnb4vUBMRkw_TMwBlaKo",
"Agroturizem Kantina Kopliku": "ChIJJxmm-
Sz7TRMR_VprtaJTvLM",
"Mulliri Sali Shijaku Pikë Turistike Bujtinë
Agroturizëm": "ChIJPcKkLcA5UBMR-vt1usSjOzY"}
```

In the next step, we have created a web application that is able to communicate with the Api place and extract the necessary information automatically or according to the settings with the search from the user in the search box. The application sends requests to the Google Places API using queries built according to the format specified for the attributes we want to retrieve and their order. In response, Google sends us data in JSON format containing the requested details. In our case, we have searched for attributes such as name, address, contact number, comments, photos, web pages of these countries if they have and other relevant fields for each destination. A piece of code written for this purpose is as follows:

```
https://maps.googleapis.com/maps/api/place/details/json?
place_id=ChIJZ1msF5rkURMR1mv_ndiy5Sk&fields=name,formatted_address,geometry,types,rating,user_ratings_total,opening_hours,photos,website,formatted_phone_number,international_phone_number,reviews&key=ourPersonalGoogleApiKey
```

This is an example of query send to Google ending. Each query ends with a key that is given Google and is unique for every user. The responses received from the API site in JSON are ready to be processed and stored in the database or to be displayed in the visual presentation of our application.

Below is the visual presentation of the application (Figure 4).

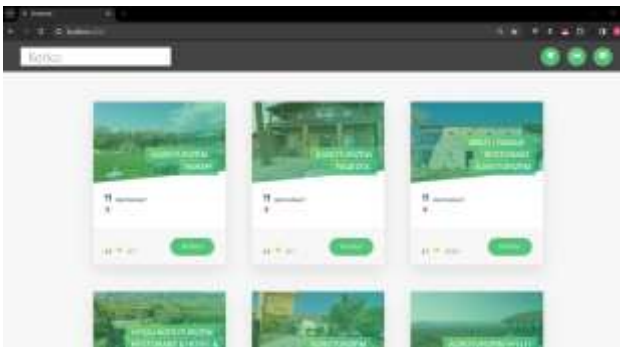


Fig. 4: The web application we used to collect data from places API

As can be seen from Figure 4, in the first view we see some photos of agrotourism points together with some information about each one, such as the type of service, ratings, number of comments on Google, etc. If we want to look for agrotourism spots near a certain location, it is enough to write the name of the city in the search box and the closest spots will appear.

A main piece of code for getting some data from the API and displaying it:

```
"use strict";
var __awaiter=(this && this.__awaiter) || function
(thisArg, _arguments, P, generator) {
    function adopt(value) { return value instanceof P ?
value : new P(function (resolve) { resolve(value); }); }
    return new (P || (P=Promise))(function (resolve,
reject) {
        function fulfilled(value) { try {
step(generator.next(value)); } catch (e) { reject(e); } }
        function rejected(value) { try {
step(generator["throw"](value)); } catch (e) {
reject(e); } }
    });
};
```

```
function step(result) { result.done ?
resolve(result.value) :
adopt(result.value).then(fulfilled, rejected); }
step((generator=generator.apply(thisArg,
_arguments || []).next()));
}); };
const express=require("express");
const axios=require('axios').default;
const apiKey='@here is my google places key';
module.exports=(() => {
    let router=express.Router();
    router.get('/initial', (req, res) => __awaiter(void 0,
void 0, void 0, function* () {
        const agroturizem=yield
axios.get(`https://maps.googleapis.com/maps/api/plac
e/textsearch/json?query=agroturizem+albania&key=${
apiKey}`);    const
result=agroturizem.data.results.filter((e) => {
return e.hasOwnProperty('photos');    });
        let photosArray=yield photosFilter(result);
        result.forEach((e, i) => {
            e['photolink']=photosArray[i];
        });    return res.json({ location: result,
});    });
    router.get('/initial/:param', (req, res) =>
__awaiter(void 0, void 0, void 0, function* () {
        const agroturizem=yield
axios.get(`https://maps.googleapis.com/maps/api/plac
e/textsearch/json?query=${req.params.param}&key=${
apiKey}`);    const
result=agroturizem.data.results.filter((e) => {
return e.hasOwnProperty('photos');    });
        let photosArray=yield photosFilter(result);
        result.forEach((e, i) => {
            e['photolink']=photosArray[i];    });    return
res.json({ location: result,    });    });
    router.post('/search', (req, res) => __awaiter(void 0,
void 0, void 0, function* () {
        const agroturizem=yield
axios.get(`https://maps.googleapis.com/maps/api/plac
e/textsearch/json?query=${req.body.search}&key=${
apiKey}`);    const
result=agroturizem.data.results.filter((e) => {
return e.hasOwnProperty('photos');    });
        let photosArray=yield photosFilter(result);
        result.forEach((e, i) => {
            e['photolink']=photosArray[i];    });
        return res.json({ location: result,    });
    });
    router.post('/search/:param', (req, res) =>
__awaiter(void 0, void 0, void 0, function* () {
        const agroturizem=yield
axios.get(`https://maps.googleapis.com/maps/api/plac
e/textsearch/json?query=${req.body.search}+"
Albania"&key=${apiKey}`);    const
result=agroturizem.data.results.filter((e) => {
return e.hasOwnProperty('photos');    });
        let photosArray=yield photosFilter(result);
        result.forEach((e, i) => {
            e['photolink']=photosArray[i];    });
        return res.json({ location: result,    });
    });
});
```

```

    ));
    function photosFilter(result) {
        return __awaiter(this, void 0, void 0, function* ()
        { let photosArray=yield Promise.all(result.map((e)
        => __awaiter(this, void 0, void 0, function* () { let
        photos=yield
        axios.get('https://maps.googleapis.com/maps/api/plac
        e/photo?maxwidth=400&photoreference=${e.photos[
        0].photo_reference}&language=sq&key=${apiKey}',
        {
            maxRedirects: 0,
            validateStatus: null,
        });
        let pdata=photos.data.toString();
        let rlength=pdata.length; let
        photosstring=`https://${pdata.substr(176, rlength -
        205).toString()}`; return photosstring; }));
        return photosArray; }); } return router; }());
    
```

### 4.3 Database Test Results

A challenging goal for us is the building of a web application that would be useful for our case. With this application, we will get all the information about the agrotourism points in Albania which are located in the places API.

Now that our MySQL database is populated with values, we can request results from it. To get these results, we need to send several queries to the database depending on the results we are looking for. Since we are interested in the information technology used by these agrotourism points, we are trying to see which are the 5 agrotourism points that have built their own website, their designations, and the website links, taking first those with the highest rating sorted by ratings. Along with this, we also need the place where they are located.

We build a query with the parameters we are looking for, which in the case of our table has this form:

```

SELECT agroturism_site_name, website, ratings, city
FROM agrotourism_sites
WHERE website IS NOT NULL
ORDER BY ratings DESC
LIMIT 5;
    
```

After the query is sent to the database in Figure 5 we see the requested results:

agroturism_site_name	website	ratings	city
Lahuta e Vjetër Agroturizim	<a href="https://lahutaevjeter.com/">https://lahutaevjeter.com/</a>	4.9	Gjanem
Alpeta Agroturizim & Winery	<a href="https://alpeta.al/">https://alpeta.al/</a>	4.9	Dodosh
Agroturizim Pylë i Dritës	<a href="https://pylletites.asehotel.com/">https://pylletites.asehotel.com/</a>	4.8	Vau i Dejës
Agroturizim Byllë	<a href="https://agroturizim-byllë.asehotel.com/">https://agroturizim-byllë.asehotel.com/</a>	4.8	Balsh
Mirizi Zaneve	<a href="https://www.mirizizaneva.al/">https://www.mirizizaneva.al/</a>	4.7	Fishtë

Fig. 5: Top 5 agrotourism destinations that have their own website selected by ratings

## 5 Conclusions and Recommendations

The study provides a solution to the collection of distributed information about agrotourism destinations in Albania using a Google Chrome extension called data scrapper and the Google Maps API through several queries, thus collecting essential details from users. This centralization effort results in a complete and easily accessible database that can be used to analyze data, make predictions, see periodic changes, etc. The active use of social networks and various digital platforms by agrotourism destinations shows their commitment to increasing interactivity with visitors. This approach not only drives engagement but also demonstrates the need for these destinations to adapt to modern communication channels.

Basically, we propose to build algorithms and scripts that we need for the systematic collection and analysis of distributed information. This process is necessary to discover the current state, trends, and opportunities of digital and information technologies in agrotourism, providing knowledge and valuable information to interested parties. The centralization and systematization of data enable potential visitors to have faster access to the relevant information they want such as websites, contact numbers, ratings and comments of visitors, and other information. This facilitates access to information and decision-making for individuals interested in agrotourism in Albania.

The study aims to contribute to the sustainable growth of agrotourism in Albania using information technologies. By using the power of digital platforms and creating a unified database, we seek to help agrotourism stakeholders.

We have implemented an application, but we suggest adding the building and implementation of algorithms and scripts for systematic data collection and analysis. This will ensure that the database is kept up-to-date and populated with new and different information. It is necessary to achieve an interaction and obtain useful information from social networks to simplify and integrate the distributed data. This can be achieved by securing partnerships to obtain information from different platforms thereby increasing the comprehensiveness of the database. It is necessary to provide a regular mechanism for periodic updating of the centralized database to reflect changes or new additions to agrotourism. This will make it possible to have accuracy and validity of information for visitors and other interested parties. An easy-to-use interface should be built for users to navigate and find the information they need. This may include the introduction of search options and interactive maps

to help users as much as possible. Promote the database built and create access to the necessary information for potential visitors, other interested parties, and policy makers. This would have a positive impact on decision-making processes and the overall growth of agrotourism in Albania as a result. This study could also serve other countries in the region, since in the application we have built, agrotourism and the name of the other country where we want to collect the data can be requested. Also, instant data scrappers can be used for the websites of those countries.

In the following works, we think of using geometric considerations, for the study, clarification, and more interesting presentation of the infrastructural connections that the agrotourism points in Albania have among themselves but also with the farms of the surrounding areas, for geometric considerations, we will follow some of our works earlier, [21], [22], there the applications of geometry are diverse, and we think that even in this research line they will give interesting results.

## 6 Discussions

In Albania, the number of agrotourism points is increasing every year. Given that these enterprises are developed in rural areas, the updating of the enterprises with information technologies proceeds with slower steps. We have noticed that studies on information technologies and software systems used for agrotourism in Albania are missing. Similar studies have been done only in other countries of the world. One of the first things that agrotourism businesses do to be in contact with other stakeholders is to put their positioning on the map. These locations, even though they are sometimes not absolute, become a source of additional information that is set by the entrepreneur or by the users. In this article, we do not guarantee the absolute accuracy of the data that our application collects and presents with the methods that we have presented in this article, since the data presented in social networks by the owners of AGT may not be absolutely correct. But during further analysis, and evaluations (such as likes, comments, etc.) from the attendees of these AGTs, we can derive a level of security regarding the accuracy of the information.

From the data obtained, we understand how many of these points use their website, booking, different social networks, etc. Having the coordinates, we can find the shortest ways to access them, which we are currently studying. By knowing which social networking platforms, they use the

most, we know where to find most of these destinations. Ratings and comments help in customer choices.

### Declaration of Generative AI and AI-assisted Technologies in the Writing Process

During the preparation of this work the authors used Grammarly for language editing. After using this service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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