

Vocational High School Mapping of Islamic Boarding Schools in East Java Using Geographic Information Systems

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Abstract— A survey, which was conducted in July 2017 by the Regional Office of the Ministry of Religion of East Java, showed that there were 2,109 Islamic boarding schools in East Java in the 2016/2017 Academic Year. Currently, information about vocational schools (SMK) in Islamic boarding schools can be found on the website of vocational school at https://datapokok.ditpsmk.net/school?menu=0&ubah=&id_prov=050000&id_kab=&id_kec=&id_bidang=&id_program=&id_kompetensi=&sts=&id_prov=050000.

Unfortunately, the public can only get information about the SMKs with their specific major or competency on the site. They still cannot see if the particular SMK is a part of Islamic Boarding Schools or is managed by regular educational foundations outside Islamic boarding schools. On the other hand, the data of the Islamic boarding schools themselves can be accessed through the website; <https://jatim.kemenag.go.id/>. On the website, the public can only see information about the boarding school but do not know the environment around the boarding school, especially information about the existence of the SMKs, the competency offered, and other related information. Based on the above reason, the research was conducted to generate solutions for the community and also the Regional Office of the Ministry of Religion of East Java to provide information on boarding schools. The result of the research is called the Geographic Information System (GIS) of the boarding schools. The research method used is the observation and the direct interview with the Head of Information and Public Relations (INMAS) Regional Office of the Ministry of Religion of East Java, laboratory research, and the implementation of the Object-Oriented Development Life Cycle (OODLC). The GIS was developed with an

HTML website framework, with programming languages (Javascript and PHP), MySql as a database, and the Google Maps API.

Keywords— Vocational Schools, Islamic Boarding Schools, WEB, Geographic Information Systems (GIS)

1. Introduction

The society makes use of information technology as a medium to find information about their daily life, including a boarding school location. Google Maps is an accessible information technology for finding places. However, Google Maps only provides information about the site of Islamic boarding schools. If people want to know the environment and information about the desired area, they can use a technology called Geographic Information Systems (GIS). This system can provide the information needed by the community. Geographic Information System (GIS) is a combination of three main elements, namely systems, data, and geography. GIS is a type of software, hardware, people, procedures, databases, and communication network facilities that are used to facilitate the processes of entry, storage, manipulation, display, and output of data or geographical information along with its attributes [1].

The community needs information about vocational school data, the competencies, the locations, names, addresses, telephone numbers, e-mails, photos of places, and other data related to the desired place. More specifically, the community needs the Geographical information about Islamic

boarding schools in East Java. A survey in July 2017 at the Regional Office of the Ministry of Religion of East Java Province showed that there was no information about the geographical boarding school. Based on the data of the Regional Office of the Ministry of Religion of East Java, there were 211 Islamic boarding schools in East Java in the 2016/2017 academic year. The existence of a large number of boarding schools makes it difficult for parents or the general public to get information about boarding schools, both general information, such as maps, names, addresses, telephone numbers, photos, and detailed information on profiles, facilities, categories, status, and the official website of each boarding school.

The common goal of parents or the general public to send their children to boarding schools is to develop the interest and desire to learn religion and to improve the child's independent behavior. But due to the lack of information about maps, names, addresses, telephone numbers, photos, and other information about the boarding school, parents go directly to the boarding school they want. Therefore, parents or the general public need the Geographic Information System that provides information about the geographical location of Islamic boarding schools in East Java, and the path to Islamic boarding schools in East Java.

Based on the background above, the researchers built a Geographic Information System (GIS) of Islamic Boarding School in East Java. The website is expected to help parents or the general public, as well as the Regional Office of the Ministry of Religion of East Java Province, to find the locations of Islamic boarding schools, along with other information about Islamic boarding schools in East Java.

2. Research Description

2.1. Related Research

Other researchers have conducted studies on the website-based Geographic Information System of Islamic boarding schools. One of which is the Geographical Information System of Islamic Based Educational Institutions (RA to Vocational Education) in East Java. The results of this study are the GIS of Vocational High Schools in Islamic Boarding Schools that displays the competencies, location maps and other school data of the Islamic Boarding Schools. Users can find information

quickly and practically if compared by using conventional map search and manual search through internet search engines [2].

2.2. Islamic Boarding School

According to [3], Pondok is a building for a temporary place that can be in the form of a house or a dormitory. Pesantren is a boarding school or a place where students learn to recite and study religion. From the above understanding, Islamic boarding school can be interpreted as a place to study religion in a house or dormitory where students are called Santri.

According to [4], in general, to graduate from the Islamic boarding school, there are two levels, which are:

- a) Salaf or Salafiyah, Islamic boarding schools are Islamic boarding schools that use traditional education systems that purely teach religious knowledge and books.
- b) Khalafi Islamic Boarding School, or Khalafiyah, is Islamic Boarding School whose education system follows the times. This boarding school is usually called the Modern boarding school.

2.3. Geographic Information Sub System I

According to [5], the GIS subsystem is described in accordance with Figure 1.

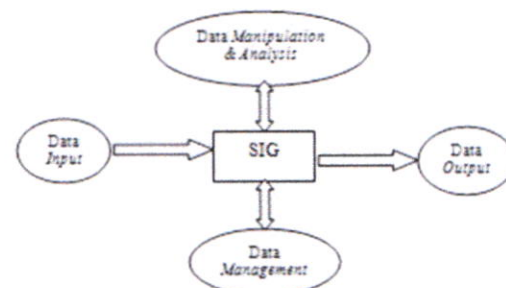


Figure 1. Illustration of subsystem SIG

1. Input Data

Collecting, preparing, and storing spatial data and attributes. This sub-system is responsible for converting the original data format into its Geographic Information System format.

2. Output Data

Displays and produces softcopy and hardcopy spatial database outputs, such as tables, graphs, maps, and so on.

Figure 3. Activity Diagram Admin Geographic Information System Islamic Boarding School in East Java

2. Activity Diagram Operator

Activity Operator diagram illustrates all activities that can be carried out by the operators on the menu options available on the operator page, shown in Figure 4.

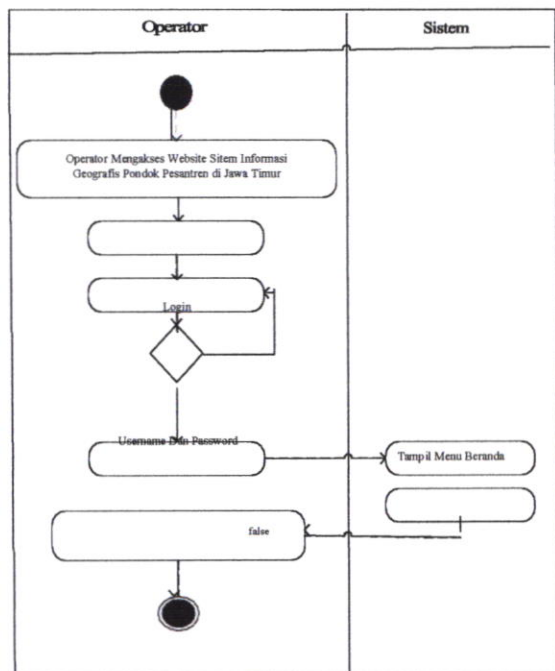


Figure 4. Activity Diagram Operator Geographic Information Systems Islamic Boarding Schools in East Java.

Figure 4 explains when the operator wants to log into the system, he must first register to get the approval from the administrator. If the login is successful, then the operator menu page appears where there is a boarding school input menu.

3. Activity Diagram Pengunjung

Activity Visitor diagram illustrates all activities that can be done by visitors to the menu choices that are on the visitor page, shown in Figure 5.

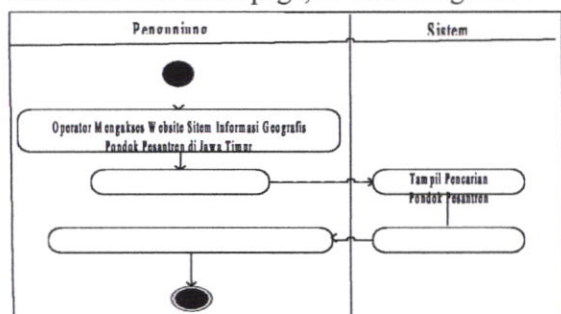


Figure 5. Activity Diagram of Geographical Information System Visitors in Islamic Boarding Schools in East Java

Figure 5 explains that visitors can immediately search for the desired boarding school with the Pondok Pesantren info menu. Visitors can choose the boarding school by entering the name of the desired boarding school. Visitors can see in detail about the boarding school by clicking on the text written next to the name of the boarding school that has been sought. After clicking on the details, visitors can see the detail information about the boarding school.

E. Class Diagram

Class diagrams are attributes and functions contained in a system that describes the structure and the description of the system, in terms of defining the classes to build the system. Classes have attributes and methods or operations.

The proposed class diagram can be seen in Figure 6.

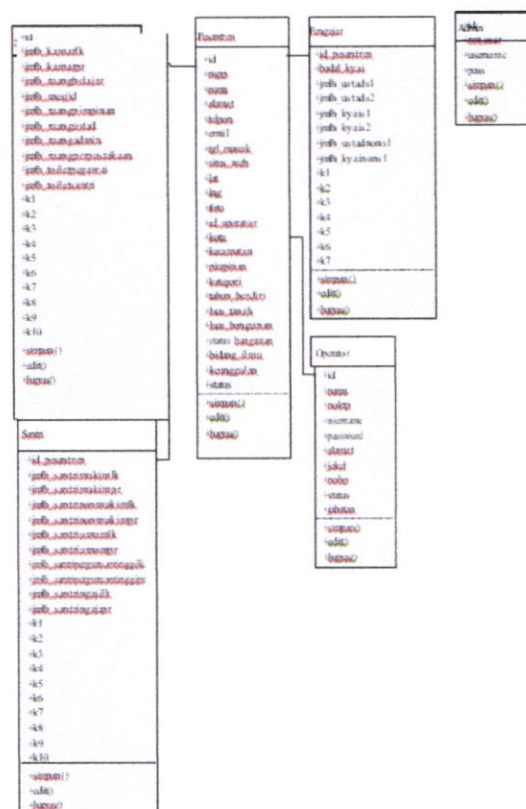


Figure 6. Class Diagram of Geographic Information System Islamic Boarding Schools in East Java

4. RESEARCH RESULTS AND ANALYSIS

A. Implementation Results

From some implementation activities, it can be seen that the main page display of the East Java Islamic Boarding School's Geographic Information System (GIS) can be accessed by parents and the general public (visitors). The following are inputs from the stages of implementing the system that had been designed previously.

1. Input Menu

a. Operator Registration Entry Form

The page (shown in Figure 7) is an interface display from the operator menu that can be used to register an operator account to log in. It also functions to record the data of Islamic boarding school operators in East Java so that the admin can see the data of Islamic boarding schools registered at the Regional Office of the Ministry of Religion East Java Province Sub-section Information and Public Relations (INMAS), based on the name of the operator.

After the operator registers, a confirmation of registration will appear. The message displays if the operator registration is successful is shown in Figure 8. The operator must wait for confirmation from the admin. If the admin has confirmed the registration, the boarding school operators can log in.

Figure 7. Menu Registration Operator Islamic Boarding School

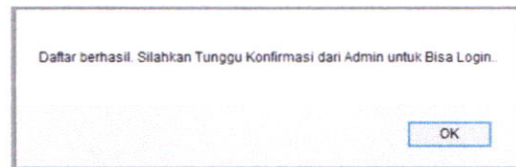


Figure 8. Message If Operator Registration is Successful

b. Operator and Admin Login Form

This page is an interface between the operator menu that can be used to log in to the main page of the operator and admin. Figure 9 is a display of the operator and admin login form menu that can only be accessed by the operator and admin.

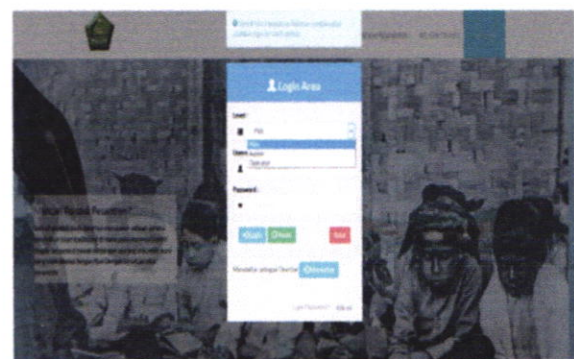


Figure 9. Operator and Admin Login Form

c. Operator Confirmation Form

After logging in, the admin can confirm the operator on the operator confirmation form (shown in Figure 10). This confirmation is done so that only registered operators can input pesantren data, data on the number of teaching staff, data on the number of students, and data on the number of facilities available at the boarding school that he manages.

Figure 10. Operator Confirmation Form

d. Pesantren Data Entry Form

The Pesantren Data Entry Form (shown in Figure 11) is a form used by the operator to input Pesantren data.

Tambah / Edit Data Pesantren

NISN: 60370010

Nama Pesantren: Perguruan Islam Al-Ranah

Deskripsi: Dengan Pendidikan Islam Kementerian Agama Republik Indonesia dapat di...

Kategori Pesantren: Khariyati

Program Pesantren: H. Hidayat Syahrul Lu. M. Ed

Kabupaten/Kota: Pading

Kecamatan: Kota Tengan

Alamat: Al-Din, Baka Gasing Aec. Kota Tengan Pading

Program Unggulan:

Telepon: 0751-7677114

Email: perguruanislam_ranah@yahoo.com

Situs web Pesantren: https://perguruanislam_ranah.wordpress.com/

Tahun Berdiri: 2004

Luas Tanah Pesantren: 50

Luas Bangunan Pesantren: 10

Status Bangunan Pesantren: Blok Pesantren Yayasan

Willing foto:

Kota:

Latitude: 0 43'31"

Longitude: 101 24'45"

Buttons: Simpan, Batal, Hapus

Figure 11. Pesantren Data Entry Form

e. Data Entry Form Number of Teachers

The teacher data entry form (shown in Figure 12) is a form used by the operator to input data on the number of teachers registered at the boarding school.

Jumlah Tenaga Pengajar

Badai_Kyai: 1

Keterangan:

Ustad S1: 320

Keterangan: Jumlah Pengajar ini terdiri atas Ustad 1

Ustad S2: 4

Keterangan: Jumlah Ustad dengan Pendidikan S2 teri

Kyai S1: 1

Keterangan:

Kyai S2: 5

Keterangan:

Ustad Non S1 / SMA: 0

Keterangan:

Kyai S1/SMA: 0

Keterangan:

Total Tenaga Pengajar: 326

Buttons: Simpan

Figure 12. Data Entry Form Number of Teachers

f. Number of Student Data Entry Form

The data entry form for the number of students (shown in Figure 13) is the form used by the operator to input data on the number of students registered at the boarding school.

Jumlah Santri

Mukmin (LK): 600

Keterangan: Siswa yang Menetap Di Pondok

Mukmin (PR): 700

Keterangan: Siswa yang menetap Di Pondok f

Non Mukmin (LK): 0

Keterangan:

Non Mukmin (PR): 0

Keterangan:

Umum (LK): 600

Keterangan: Bersekolah di sekolah umum

Umum (PR): 700

Keterangan: Siswa yang belajar di sekolah um

Perguruan Tinggi (LK): 0

Keterangan:

Perguruan Tinggi (PR): 0

Keterangan:

Ngapi (LK): 0

Keterangan:

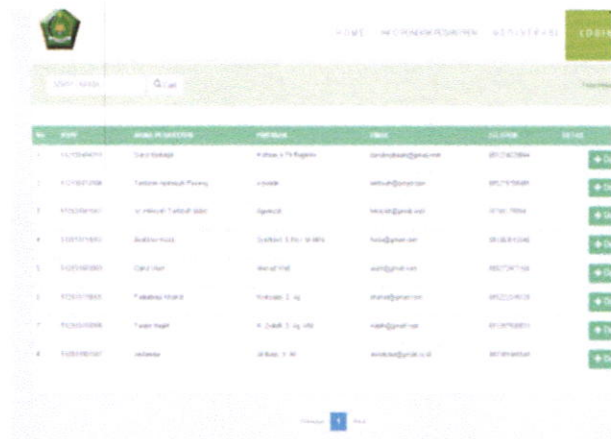
Ngapi (PR): 0

Keterangan:

Total Santri: 2600

Buttons: Simpan

Figure 13. Data Entry Form Number of Santri



No	Kode	Nama Pesantren	Alamat	Email	No Telp
1	101010001	Asma'ul Husna	Kabupaten Tegal	asmaulhusna@gmail.com	0812142384
2	101010002	Tanaka Islamic Center	Kabupaten Tegal	tanaka@gmail.com	0812142384
3	101010003	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com	0812142384
4	101010004	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com	0812142384
5	101010005	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com	0812142384
6	101010006	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com	0812142384
7	101010007	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com	0812142384
8	101010008	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com	0812142384

Figure 16. Islamic Boarding School Info Page

On the Details menu, there are written Details that contain data relating to the pesantren, namely the leadership, Website, Categorical Boarding School, address, telephone, number of teachers, number of students, number of facilities and also a map of the location of each boarding school in East Java by clicking Tracking To Location. For more details, detailed information on Islamic boarding schools can be seen in Figure 19 and Figure 20.

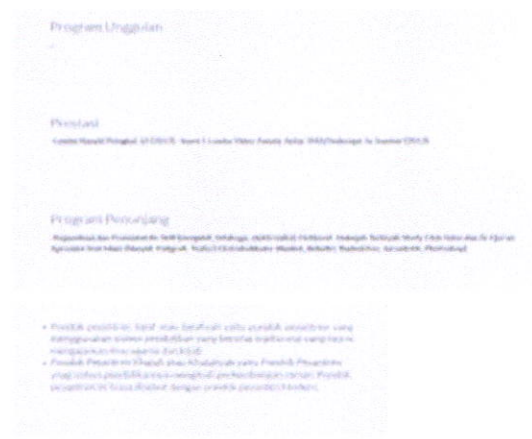


PERGURUAN ISLAM AN RISALAH (ISLAMIC BOARDING SCHOOL)
 Jl. Sekeloa, Rt. 4/10, Desa Sekeloa, Kec. Sekeloa, Kab. Gresik, Jawa Timur 61354
 Telp: 031-75711010

CONTACT INFO
 Alamat: Jl. Sekeloa Rt. 4/10, Desa Sekeloa, Kec. Sekeloa, Kab. Gresik, Jawa Timur 61354
 Telp: 031-75711010
 Email: anrisalah@gmail.com

DAFTAR PESANTREN AN R

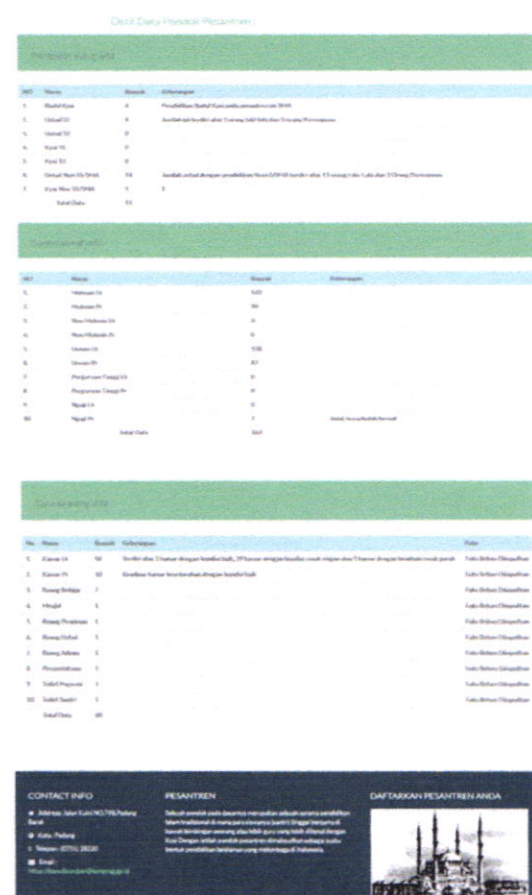
Map
 Lokasi: Jl. Sekeloa Rt. 4/10, Desa Sekeloa, Kec. Sekeloa, Kab. Gresik, Jawa Timur 61354
 To: 4 km, About 2 Hours 15 Min



Program Unggulan
 Pesantren
 Pesantren An Risalah (Islamic Boarding School) adalah salah satu pesantren yang memiliki program unggulan di bidang pendidikan, penelitian, dan pengabdian masyarakat.

Program Peningkatan
 Program Peningkatan Pesantren An Risalah (Islamic Boarding School) adalah salah satu program yang bertujuan untuk meningkatkan kualitas pendidikan, penelitian, dan pengabdian masyarakat.

• Pesantren An Risalah (Islamic Boarding School) adalah salah satu pesantren yang memiliki program unggulan di bidang pendidikan, penelitian, dan pengabdian masyarakat.



Detail Data Pesantren Pesantren

No	Nama	Alamat	Detail
1	Asma'ul Husna	Kabupaten Tegal	asmaulhusna@gmail.com
2	Tanaka Islamic Center	Kabupaten Tegal	tanaka@gmail.com
3	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com
4	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com
5	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com
6	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com
7	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com
8	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com

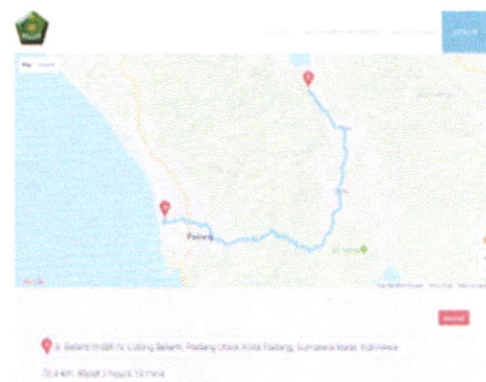
Detail Data Pesantren Pesantren

No	Nama	Alamat	Detail
1	Asma'ul Husna	Kabupaten Tegal	asmaulhusna@gmail.com
2	Tanaka Islamic Center	Kabupaten Tegal	tanaka@gmail.com
3	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com
4	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com
5	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com
6	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com
7	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com
8	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com

Detail Data Pesantren Pesantren

No	Nama	Alamat	Detail
1	Asma'ul Husna	Kabupaten Tegal	asmaulhusna@gmail.com
2	Tanaka Islamic Center	Kabupaten Tegal	tanaka@gmail.com
3	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com
4	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com
5	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com
6	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com
7	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com
8	Al-Farooq Islamic Center	Kabupaten Tegal	alfarooq@gmail.com

Figure 17. Details of Islamic Boarding School



CONTACT INFO
 Alamat: Jl. Sekeloa Rt. 4/10, Desa Sekeloa, Kec. Sekeloa, Kab. Gresik, Jawa Timur 61354
 Telp: 031-75711010
 Email: anrisalah@gmail.com

DAFTAR PESANTREN AN R

Map
 Lokasi: Jl. Sekeloa Rt. 4/10, Desa Sekeloa, Kec. Sekeloa, Kab. Gresik, Jawa Timur 61354
 To: 4 km, About 2 Hours 15 Min



Figure 18. Location Tracking

Figure 18 explains to parents and the general public how to find out the location of pesantren. Map image illustrates the path map location of Islamic boarding schools. The path in symbol A starts from where the community is accessing, while the routing in symbol B accompanied by a red marker is the location of the intended boarding school. The specific information about Islamic boarding schools is also explained in detail. Also, Figure 18 describes the path information that can be used to determine the distance to the destination boarding school.

The benefits obtained from the detailed information of the Islamic boarding school in Figure 18 are:

- 1) People can easily find the location of Islamic boarding schools in East Java.
- 2) The community can determine which Islamic boarding school that is considered as an option easily.
3. Output Design

a. Islamic Boarding School Report

Figure 19 is a report of Islamic boarding schools from every Islamic boarding school in East Java. This Islamic boarding school report is derived from Islamic boarding school data that has been entered on the boarding school entry forms by the operators of each Islamic boarding school.

NO	NAMA PESANTREN	PEMBAWA	EMAIL	TELEPON	ALAMAT	OPERATOR
1	1121000012	Daqir Ridwan	daqirridwan@gmail.com	0812140384	Jl. Srenged Kemuning Km 2	Andri
2	1121000018	Tetapan Samudra Pading	daqir	0812140384	Padang Lantak Negeri	Andri
3	1121000017	Pesantren Darul Fatah & Nurul	Daqir Ridwan, S. Ag	0812140384	Jl. Tanjung Rengas Km 2 Padang Lantak	Andri
4	1121000019	Daqir Ridwan	daqirridwan@gmail.com	0812140384	Jl. Tanjung Rengas Km 2 Padang Lantak	Andri
5	1121000020	Tetapan Samudra Pading	Daqir Ridwan, S. Ag	0812140384	Jl. Tanjung Rengas Km 2 Padang Lantak	Andri
6	1121000021	Andri	daqirridwan@gmail.com	0812140384	Jl. Tanjung Rengas Km 2 Padang Lantak	Andri
7	1121000022	Al-Farooq Tegal	M. Nur D. Padoh Negeri	0812140384	Negeri Tegal	Andri

Figure 19. Pesantren Data Report

b. Report on Islamic Boarding Schools and Santri

Figure 20 is a report of Islamic boarding schools and students in East Java. This pesantren and santri data report is derived from pesantren and santri data that have been entered in the pesantren and santri entry forms by the operator.

NO	KABUPATEN/KOTA	KATEGORI PONDOK PESANTREN	JUMLAH					
			SALAFIYAH	KHALAFIYAH	JUMLAH	L	P	JUMLAH
1	Tanjung Rengas	0	1	1	2	0	0	2
2	Tanjung Rengas	0	1	1	2	0	0	2
3	Lantak Negeri	0	1	1	2	0	0	2

Figure 20. Pesantren and Santri Report

c. Operator Report

Figure 21 is the operator data report from each pesantren in East Java. This report is derived from operator data that has been entered on the operator registration entry form and confirmed by the admin.

NO	ID	NAMA OPERATOR	NO KTP	ALAMAT	JENIS	NIK	STATUS
1	12	Andri	317100120000	Padang	Laki-laki	3034073071	aktif

Figure 21. Operator Report

5. Conclusion

Based on the analysis and discussion that has been carried out, the researcher built the Geographic Information System (GIS) website for the East Java Islamic Boarding School Location that assist the Regional Office of the Ministry of Religion in East Java Province in providing:

1. Convenience to parents and the general public in finding information related to the Islamic boarding schools, and other information of every Islamic boarding schools in East Java, from where they are accessed.

2. Presentation of information in the form of a special website, so that the delivery of information about the location and the route to the existing Islamic boarding school in East Java, by the Regional Office of the Ministry of Religion of East Java Province, particularly the Information and Public Relations (INMAS) section, is easily accessible to parents and the general public.

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