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CONFERENCE PROCEEDING

Smart Green Technology for Sustainable Living

25 - 27 OCTOBER 2018

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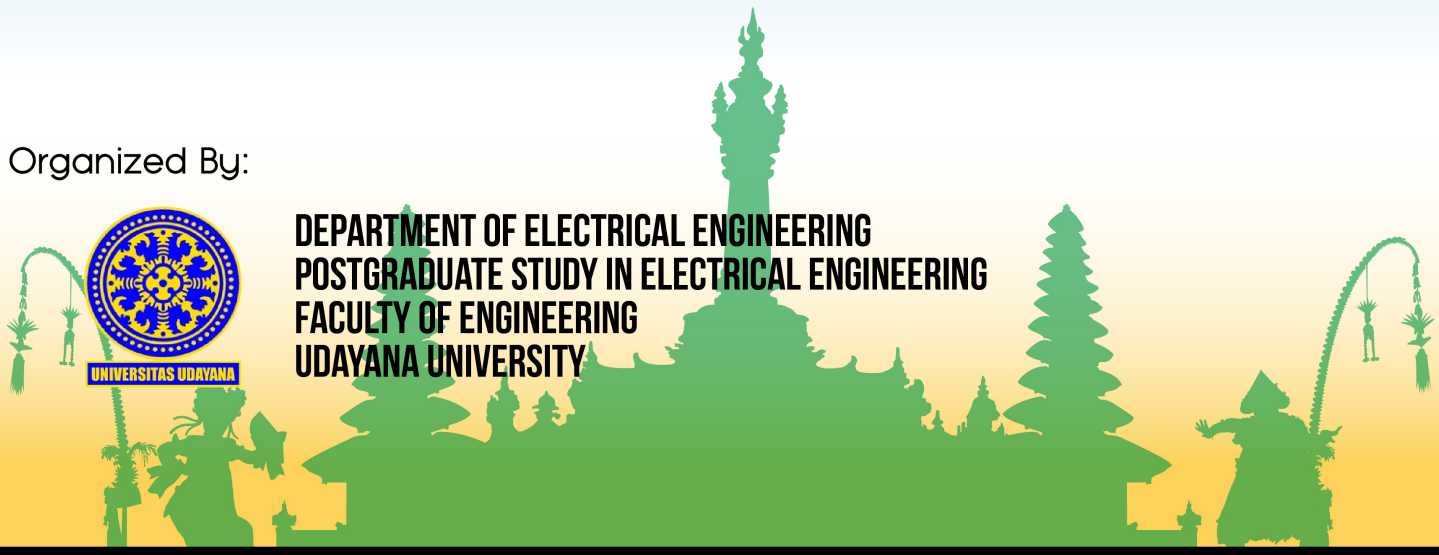

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WELCOME MESSAGE

As the General Chair of the 2018 International Conference on Smart Green Technology in Electrical and Information Systems (ICSGTEIS), it is my great pleasure to welcome you to the conference held in Kuta Bali of Indonesia. The ICSGTEIS 2018 conference aims to provide a forum for international researchers, experts, and students to share, exchange ideas, innovation, and experience of the research in the field of Smart-Green Technology. The conference provides an opportunity to strengthen collaboration and networking among participants while enjoying a religious atmosphere and traditional culture of Bali.

The ICSGTEIS covers a number of topics organized into tracks such as Energy and Power Engineering, Electronic Devices and Systems, Multimedia Telecommunications, and Software Engineering and Information Systems. All accepted papers are selected through a peer review process. The committee has received 110 submissions, and 43 papers are selected for presentation. In addition to the technical sessions, the conference program also includes plenary lectures and social event.

I would like to take this opportunity to thank the keynote speakers: Professor Jean-Marie BONNIN from *Institut Mines Télécom* France, Dr Tania Urmee from School of Engineering and Information Technology Murdoch University, Perth, Australia, and Associate Professor Wei-Chung Teng from Department of Computer Science and Information Engineering, National Taiwan University of Science and Technology, Taiwan for sharing their latest research in their respected fields within electrical and information systems.

I would also like to express my appreciation to Professor AAR Sudewi as Rector Udayana University, Professor NG Antara as Vice Rector Udayana University for Academic Affairs, Professor NPG Suardana as Dean Faculty of Engineering, Dr IBG Manuaba as Head of Department of Electrical Engineering, Dr Linawati as Head of Postgraduate Program in Electrical Engineering, Faculty of Engineering, Udayana University who have supported the ICSGTEIS conference this year. I also would like to thank Professor FY Zulkifli as Chair of IEEE Indonesia Section for their continuous support to the conference. Many thanks also go to the Technical Program Committee and the Organizing Committee, Center for Community Based Renewable Energy (CORE) Udayana University, Udayana Center for Learning Innovation in Asia Pacific (UCLEAP), and IEEE Student Branch Udayana University. Last but not least, thanks to all Presenters and Authors who have chosen ICSGTEIS 2018 to publish their research findings which without their participation this conference would not be possible.

I wish you all to have a great time and a successful conference while sampling the hospitality of Bali.

Dr I Nyoman Satya Kumara, MIEEE
General Chair of ICSGTEIS 2018

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Database of Indonesian Sign Systems

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***Abstract*— Communication of persons with hearing impairment with the general public is very limited, this is because the general public does not understand the Indonesian sign system. To overcome these problems it is necessary to develop a system that is able to translate spoken language into sign language or vice versa from sign language to oral language. The first thing to do to build a translator system is to create a database that can be used to store the Indonesian Sign System. The database is first created because the database is the foundation of a system. To create a database of sign language and observation systems, there are many constraints, namely the lack of reference, the limited number of resource persons and the number of absorption words. In this study, the Indonesian sign language system data will be used in the form of images. The purpose of using images inside so that people with hearing impairment are easier to understand sign language movements and if there are researchers who will develop translator applications for sign language, just take the database that has been created.**

Keywords*— *Database, Indonesian Sign Systems, SOM, relational

I. INTRODUCTION

The lack of communication skills of deaf people with the general public, causes deaf people unable to understand an event and information that comes from oral communication. Deaf people often experience difficulties when accessing public facilities, studying at school, and communicating with colleagues. This causes people with hearing impairment to be increasingly discriminated and isolated.

The number of deaf people in Indonesia is currently quite a lot reaching 0.07 %of the total population in Indonesia [1]. The solution to these problems needs to be initiated by an information technology that can connect the communication of deaf people with the general public. At the moment there are many translator technicians, especially those who are deaf who have been developed by academics and practitioners, one of which is the voice-to-text translator.

Output in the form of text is less preferred by deaf people, because deaf people must read first. Deaf people prefer the translator output in the form of sign language movements that are presented in the form of images [2]. At the moment there is no sign language translator that uses using images as an output of the Indonesian sign language system.

The purpose of this study is to create a relevant database and retrieve it from the Indonesian Sign Language System dictionary. This study focuses on packaging the Indonesian Sign Language System dictionary into a database [3]. some studies that have conducted research related to deaf people, the following are examples of applications to help deaf oral translators to text and convert text into sign language [4,5]. Research that has been done has never used a large dictionary of Indonesian sign language systems. This is an obstacle for this research, the lack of research that focuses on the Indonesian sign language system makes researchers start from scratch. This is further complicated by the constraints in the field, namely the lack of references, the limited number of resource persons, and many words of absorption in the Indonesian sign language system. The purpose of this research is to create a database that specifically presents Indonesian sign language systems. With this database researchers who want to develop information technology specifically for the database can refer to this database. Database of Indonesian sign language systems developed in the form of images.

Files with image extensions require effective storage, efficient access, and easily understood data structures [6]. To develop a good database structure, a proper development method is needed, Semantic Object Model (SOM) is one good database development method.

Advantages of using Semantic Objects The database model is more structured and can explain the relationship between data to logic users [7,8]. Semantic Model objects are presented with graphs, so the semantics of the model object are easier to understand

Semantic models consist of entities and attributes. Relationships between entities are linked to arrows. The database that will be built consists of several entities, namely word, basic sign_words, affix, repetition, formed signal. After that the database will be converted to relational database design.

Relational database design is used to model Indonesian data Sign System into a database model where there is a table consisting of rows and columns, each row of data represents a record [9]. All tables in the Database of Indonesian Sign System have relationships according to needs. After that the results of the relational database design will be implemented into the MySQL database.

II. EXISTING RESEARCH

A. Data Set Australian Sign Language

This data is the first set of sign language data developed. The advantage of the data set of the neutral language, this data set is open source so that researchers or academics in

Australia can use and develop this data set freely without being recognized for costs. Set data in this study includes 2565 sign languages [10]. So that the development of applications that aim to improve the communication skills of deaf people in aurtralia can develop rapidly.

The data set used is not in the form of a database system, each word is presented separately and is presented in the ".tds" format. This causes other researchers who want to develop information technology specifically for the deaf, researchers must create a database first. To overcome these problems in this study data sets will be presented in the form of a database. If there are developers or researchers who want to make information technology related to deaf people. Researchers can easily retrieve this data with MySql Queries

B. *Videos for Learning Indonesian*

The study, entitled "Indonesia Sign Language Computer Application for the Deaf", strives for people with disabilities to be able to learn Indonesian well. This research makes an application in which there are videos for learning Indonesian for deaf people [11]. The videos in this study are used to study words and sentences.

This research is just like a game, not a translator application, other than that the vocabulary in the application is very small, while deaf people really need a lot of vocabulary. This study also does not have the clarity of where the word or sentence was taken.

The database that will be created can accommodate 3340 taken from the Indonesian language gesture system dictionary. In addition, the data used can be developed for other research.

C. *Translator Sign Language*

Research with the title "Sign language translator and gesture recognition" considers that deaf people have difficulty communicating with the general public, because on average the general public does not understand sign language [12]. This study will examine how to create one-way communication, which translates sign language into text with images. This research has a good function because it can help deaf people to communicate with the general public. The weakness of this system is to recognize sign language requires a fairly long process.

III. DISCUSSION AND RESULTS

A. *Study Area*

After conducting research at SMP-LB Karya Mulya Surabaya, it can be concluded that there are a number of needs of hearing impaired persons associated with the Indonesian Language Sign System.

1. The area used for Indonesian Sign Systems is the chest area up to the head
2. Indonesian Sign Systems is not a new language, the structure of Indonesian Sign Systems is the same as the Indonesian oral language. Inside there are also key words, prefixes, and inserts.
3. Deaf people prefer Indonesian Sign Systems rather than writing because with Indonesian Sign Systems people with hearing impairment understand faster
4. Sign language is derived from the words Indonesian Sign Systems and arranged with Subject-Predicate-Objects.

B. *The Need for Database of Indonesian Sign Systems*

The construction of this database requires a lot of energy and time because there are no researchers specifically to build the Indonesian Sign Systems database. When developing this database researchers experienced many obstacles including.

Lack of information relating to the development of the Indonesian Sign Systems database. With a large number of words, researchers must take pictures from the sign language dictionary, the number of words absorbed in Indonesian.

There is no example of the Indonesian Sign Systems model, so that the database built can be good and usable. for The next researcher, when building this system researchers refer from other data sets, namely the Australian set of sign language data although the language structure is different.

Indonesian sign system is an Indonesian language tool, researchers must first understand the Indonesian language structure. Study the words additions, repetitions, inserts, or absorption.

The number of teachers who understand Indonesian Sign Systems is very small so that when conducting interviews the researchers find it difficult to find speakers who are truly interested in the Indonesian sign language. Deaf people who understand sign language are also very limited, namely those who are deaf who have education in special schools with hearing impairments.

C. *Identification of Semantic Object Models*

Semantic Model is a model used to clarify the relationship between data and logic users [11]. This method is very effective when used to design a database of Indonesian sign systems..

The creation of a database of Indonesian sign systems must be really thorough because the absence of a database that specifically addresses the database of Indonesian Sign Systems is the basis for the development of specialized software for the deaf [12]. So that this database can be used by all researchers then to determine entities, attributes, and relationships. The following are semantic object model images.

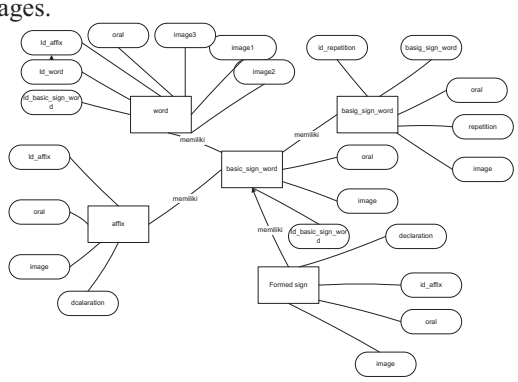


Fig. 1. Semantic Object Model

Fig. 1 illustrates the semantic object model, the database designed has 2 entities and 3 relations. More detailed explanation can be seen in the table below.

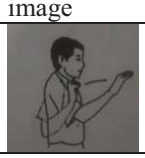
Basic word is used to store key words in the database of Indonesian Sign Systems. Main signals are signals that symbolize a word or concept. This signal is formed by various types of places, directions, and frequencies, the following are basic_sign_words tables

TABLE I. Basic_sign_words entity

sic_sign_words	
ame atribut	information
id_basic sign_words	Primary key
oral	words in oral form
image	Indonesian sign system image

TABLE I. contains the main words, which are used in Indonesian. In the basic_sign_words table, said there are three filed. The first field "id_basic sign_words" is the key to the table. The second "oral" field is used to store words spoken in oral form. The third field "image" is used to save words in the form of images. The following is an example of the data to be inputted to the basic sign_words table.

TABLE II. Example of Basic sign words

id_affix	oral	image
101	lempar	

Source: (Kamus sistem isyarat bahasa Indonesia:2002)

Affix is a signal that symbolizes the prefix and suffix in the Indonesian Language System. The following is an affix table.

TABLE III. Affix entities

affix	
Name atribut	information
Id_affix	Primery key
lisan	words in lisan form
image	Indonesian sign language picture
Declaration	Keterengan affix

Number equations consecutively. Equation numbers, TABLE II. contains the affix, which is used in the Indonesian sign system. In the affix table, said there are three filed. The first field "id_affix" is the key to the table. The second "oral" field is used to store words spoken in oral form. The third field "image" is used to save words in the form of images. The following is an example of the data that will be inputted to the affix table.

TABLE IV. Example of Affix

id_basic sign_words	oral	ıage	declaration
2056	me		prefix
2070	-kan		suffix

Source: (Kamus sistem isyarat bahasa Indonesia:2002)

To simplify the use of the word sign language in this study, a word has been obtained that has an affix, the following is the composition of the table to be created.

TABLE V. Entitas word

affix	
Name atribut	information
id_word	Primary key
Id_affix	foreign key
id_basic_sign_word	foreign key
lisan	words in lisan form
Image1	Indonesian sign system picture
Image2	Indonesian sign system picture
Image3	Indonesian sign system picture

The words used in the Indonesian sign system are the same as Indonesian, the only difference is the way it is done, the following is the example of throwing, throwing using two images, namely the prefix me and the word throwing.

TABLE VI. Example words

id_basic sign_words	oral	Image1	Image2	Image3
3001	melempar			

Source: (Kamus sistem isyarat bahasa Indonesia:2002)

D. Relational database design

Relational database is one form of data storage, the table in this model allows it to be able to take relationships from the parent table called the relation table. In this study there are 2 parent tables namely basic_sign_words table and table [13]. Both tables form a relation and become a table that stores additions and principal words into words, these tables are word tables. There are tables that represent repetitions, these tables get relationships from basic_sign_words.

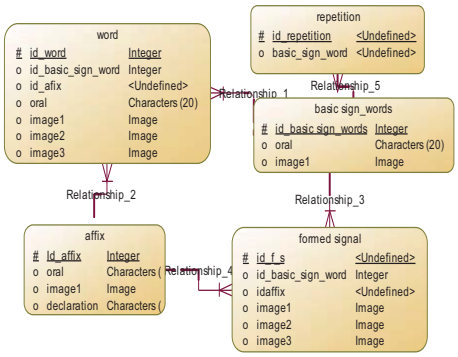


Fig. 2. Relational database design Indonesia sign system

E. Implementation to the mysql database.

Database of Signaling Systems Even though Indonesia is made on a MySQL database. Database System for Indonesian Signals is made on MySql because this database is open source, many researchers and academics in Indonesia use a lot of Mysql databases [14,15]. The table structure in the mysql database consists of fields and records. Field, the following is the table structure in basic_sign_words.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	id_basic_sign_words	int(5)			No	None			Change Drop Primary Unique Lainnya
2	oral	char(20)	latin1_swedish_ci		No	None			Change Drop Primary Unique Lainnya
3	image	blob			No	None			Change Drop Primary Unique Lainnya

Fig. 3. Basic_sign_words table structure

The basic_sign_words table consists of 3 fields, namely.

- The id_sign_word: field is the primary key, this data field type is an integer.
- Oral field: this field is used to save sentences in the form of words (alphabetical), the type of oral data field is char
- Field image: used to store sign language images. Field type image is BLOB

	id_basic_sign_words	oral	image
Edit Copy Delete	101	lempar	[BLOB - 35.1 KiB]
Edit Copy Delete	102	benjol	[BLOB - 8.1 KiB]
Edit Copy Delete	103	bensin	[BLOB - 11.1 KiB]
Edit Copy Delete	104	bentak	[BLOB - 13.4 KiB]
Edit Copy Delete	105	bentang	[BLOB - 10.1 KiB]

Fig. 4. Record table basic_sign_words

The number of words stored in this database reaches 3340 main words taken from the Indonesian sign system dictionary. The word repetition into the database is 80 words. The number of insert words entered is namely -em-, -el-, -er-, -in-. The word affix that is included in this statement is, in, di-, ter-, pe-, per-, and -nya. The word suffix included in this database -kan, -an, -i, and so on.

IV. CONCLUSION

This study produced a database of Indonesian sign language systems. The database is built with several stages of database creation, namely the semantic object model, relational database design, implementation to the mysql database. The database consists of 2 entity tables and 3 relation tables that are formed from interviews with resource persons and literature studies from dictionaries, these tables are basic words, word additions, repetitions and formations. With database structures and records easy to understand. The number of words stored in this database reaches 3340 main words taken from the Indonesian sign system dictionary. The word repetition into the database is 80 words. The number of insert words entered is namely -em-, -el-, -er-, -in-. The word affix that is included in this statement is, in, di-, ter-, pe-, per-, and –nya. The word suffix included in this database -kan, -an, -i, and -nya. It is hoped that researchers can utilize this database. So that when they want to develop technology related to the sign system that Indonesia researchers do not need to take data and are not constrained by the small number of resource persons, the number of absorption words and the least references related to the deaf sign language system.

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ISBN: 978-1-5386-6023-2 Bali, 25 - 27 October 2018 ICSGTEIS 2018 Database of Indonesian Sign Systems Risky Aswi Ramadhani Doctor of Engineering Program Udayana University Bali, Indonesia risky_aswi@unpkediri.ac.id I Made Sudarma Departement of Electrical Engineering Udayana University Bali, Indonesia imasudarma@gmail.com Abstract— Communication of persons with hearing impairment with the general public is very limited, this is because the general public does not understand the Indonesian sign system. To overcome these problems it is necessary to develop a system that is able to translate spoken language into sign language or vice versa from sign language to oral language. The first thing to do to build a translator system is to create a database that can be used to store the Indonesian Sign System. The database is first created because the database is the foundation of a system. To create a database of sign language and observation systems, there are many constraints, namely the lack of reference, the limited number of resource persons and the number

of absorption words. In this study, the Indonesian sign language system data will be used in the form of images. The purpose of using images inside so that people with hearing impairment are easier to understand sign language movements and if there are researchers who will develop translator applications for sign language, just take the database that has been created. Keywords— Database, Indonesian Sign Systems, SOM, relational I. INTRODUCTION The lack of communication skills of deaf people with the general public, causes deaf people unable to understand an event and information that comes from oral communication. Deaf people often experience difficulties when accessing public facilities, studying at school, and communicating with colleagues. This causes people with hearing impairment to be increasingly discriminated and isolated. The number of deaf people in Indonesia is currently quite a lot reaching 0.07 %of the total population in Indonesia [1]. The solution to these problems needs to be initiated by an information technology that can connect the communication of deaf people with the general public. At the moment there are many translator technicians, especially those who are deaf who have been developed by academics and practitioners, one of which is the voice-to-text translator. Output in the form of text is less preferred by deaf people, because deaf people must read first. Deaf people prefer the translator output in the form of sign language movements that are presented in the form of images [2]. At the moment there is no sign language translator that uses using images as an output of the Indonesian sign language system. The purpose of this study is to create a relevant database and retrieve it from the Indonesian Sign Language System dictionary. This study focuses on packaging the Indonesian I Ketut Gede Darma Putra Departement of Electrical Engineering Udayana University Bali, Indonesia ikgdarmaputra@unud.ac.id Ida Ayu Dwi Giriantari Departement of Electrical Engineering Udayana University Bali, Indonesia dayu.giriantari@unud.ac.id Sign Language System dictionary into a database [3]. some studies that have conducted research related to deaf people, the following are examples of applications to help deaf oral translators to text and convert text into sign language [4,5]. Research that has been done has never used a large dictionary of Indonesian sign language systems. This is an obstacle for this research, the lack of research that focuses on the Indonesian sign language system makes researchers start from scratch. This is further complicated by the constraints in the field, namely the lack of references, the limited number of resource persons, and many words of absorption in the Indonesian sign language system. The purpose of this research is to create a database that specifically presents Indonesian sign language systems. With this database researchers who want to develop information technology specifically for the database can refer to this database. Database of Indonesian sign language systems developed in the form of images. Files with image extensions require effective storage, efficient access, and easily understood data structures [6]. To develop a good database structure, a proper development method is needed, Semantic Object Model (SOM) is one good database development method. Advantages of using Semantic Objects The database model is more structured and can explain the relationship between data to logic users [7,8]. Semantic Model objects are presented with graphs, so the semantics of the model object are easier to understand Semantic models consist of entities and attributes. Relationships between entities are linked to arrows. The database that will be built consists of several entities, namely word, basic sign_words, affix, repetition, formed signal. After that the database will be converted to relational database design. Relational database design is used to model Indonesian data Sign System into a database model where there is a table consisting of rows and columns, each row of data represents a record [9]. All tables in the Database of Indonesian Sign System have relationships according to needs. After that

the results of the relational database design will be implemented into the MySQL database. II. EXISTING RESEARCH A. Data Set Australian Sign Language This data is the first set of sign language data developed. The advantage of the data set of the neutral language, this data set is open source so that researchers or academics in 978-1-5386-6023-2/18/$31.00 ©2018 IEEE 225 Australia can use and develop this data set freely without being recognized for costs. Set data in this study includes 2565 sign languages [10]. So that the development of applications that aim to improve the communication skills of deaf people in aurtralia can develop rapidly. The data set used is not in the form of a database system, each word is presented separately and is presented in the ".tds" format. This causes other researchers who want to develop information technology specifically for the deaf, researchers must create a database first. To overcome these problems in this study data sets will be presented in the form of a database. If there are developers or researchers who want to make information technology related to deaf people. Researchers can easily retrieve this data with MySql Queries B. Videos for Learning Indonesian The study, entitled "Indonesia Sign Language Computer Application for the Deaf", strives for people with disabilities to be able to learn Indonesian well. This research makes an application in which there are videos for learning Indonesian for deaf people [11]. The videos in this study are used to study words and sentences. This research is just like a game, not a translator application, other than that the vocabulary in the application is very small, while deaf people really need a lot of vocabulary. This study also does not have the clarity of where the word or sentence was taken. The database that will be created can accommodate 3340 taken from the Indonesian language gesture system dictionary. In addition, the data used can be developed for other research. C. Translator Sign Language Research with the title "Sign language translator and gesture recognition" considers that deaf people have difficulty communicating with the general public, because on average the general public does not understand sign language [12]. This study will examine how to create one-way communication, which translates sign language into text with images. This research has a good function because it can help deaf people to communicate with the general public. The weakness of this system is to recognize sign language requires a fairly long process. III. DISCUSSION AND RESULTS A. Study Area After conducting research at SMP-LB Karya Mulya Surabaya, it can be concluded that there are a number of needs of hearing impaired persons associated with the Indonesian Language Sign System. 1. The area used for Indonesian Sign Systems is the chest area up to the head 2. Indonesian Sign Systems is not a new language, the structure of Indonesian Sign Systems is the same as the Indonesian oral language. Inside there are also key words, prefixes, and inserts. 3. 4. Deaf people prefer Indonesian Sign Systems rather than writing because with Indonesian Sign Systems people with hearing impairment understand faster Sign language is derived from the words Indonesian Sign Systems and arranged with Subject-Predicate- Objects. B. The Need for Database of Indonesian Sign Systems The construction of this database requires a lot of energy and time because there are no researchers specifically to build the Indonesian Sign Systems database. When developing this database researchers experienced many obstacles including. Lack of information relating to the development of the Indonesian Sign Systems database. With a large number of words, researchers must take pictures from the sign language dictionary, the number of words absorbed in Indonesian. There is no example of the Indonesian Sign Systems model, so that the database built can be good and usable. for The next researcher, when building this system researchers refer from other data sets, namely the Australian set of sign language data although the language structure is different. Indonesian sign system is an Indonesian language tool,

researchers must first understand the Indonesian language structure. Study the words additions, repetitions, inserts, or absorption. The number of teachers who understand Indonesian Sign Systems is very small so that when conducting interviews the researchers find it difficult to find speakers who are truly interested in the Indonesian sign language. Deaf people who understand sign language are also very limited, namely those who are deaf who have education in special schools with hearing impairments. C. Identification of Semantic Object Models Semantic Model is a model used to clarify the relationship between data and logic users [11]. This method is very effective when used to design a database of Indonesian sign systems.. The creation of a database of Indonesian sign systems must be really thorough because the absence of a database that specifically addresses the database of Indonesian Sign Systems is the basis for the development of specialized software for the deaf [12]. So that this database can be used by all researchers then to determine entities, attributes, and relationships. The following are semantic object model images. oral image3 Id_affix image1 id_repetition Id_word image2 Id_basic_sign_wor d word basig_sign_word memiliki Id_affix memiliki oral basic_sign_word memiliki oral affix image memiliki Id_basic_sign_wor d image Formed sign dcalaration image Fig. 1. Semantic Object Model basig_sign_word declaration id_affix oral oral repetition image 226 Fig. 1 illustrates the semantic object model, the database designed has 2 entities and 3 relations. More detailed explanation can be seen in the table below. Basic word is used to store key words in the database of Indonesian Sign Systems. Main signals are signals that symbolize a word or concept. This signal is formed by various types of places, directions, and frequencies, the following are basic_sign_words tables TABLE I. Basic_sign_words entity sic_sign_words ame atribut information id_basic sign_words Primary key oral words in oral form image Indonesian sign system image TABLE I. contains the main words, which are used in Indonesian. In the basic_sign_words table, said there are three filed. The first field "id_basic sign_words" is the key to the table. The second "oral" field is used to store words spoken in oral form. The third field "image" is used to save words in the form of images. The following is an example of the data to be inputted to the basic sign_words table. TABLE II. Example of Basic sign words id_affix oral image 101 lempar Source: (Kamus sistem isyarat bahasa Indonesia:2002) Affix is a signal that symbolizes the prefix and suffix in the Indonesian Language System. The following is an affix table. TABLE III. Affix entities affix Name atribut information Id_affix Primery key lisan words in lisan form image Indonesian sign language picture Declaration Keterengan affix Number equations consecutively. Equation numbers, TABLE II. contains the affix, which is used in the Indonesian sign system. In the affix table, said there are three filed. The first field "id_affix" is the key to the table. The second "oral" field is used to store words spoken in oral form. The third field "image" is used to save words in the form of images. The following is an example of the data that will be inputted to the affix table. TABLE IV. Example of Affix id_basic sign_words oral age declaration 2056 me prefix 2070 -kan suffix Source: (Kamus sistem isyarat bahasa Indonesia:2002) To simplify the use of the word sign language in this study, a word has been obtained that has an affix, the following is the composition of the table to be created. TABLE V. Entitas word affix Name atribut information id_word Primary key Id_affix foreign key id_basic_sign_word foreign key lisan words in lisan form Image1 Indonesian sign picture system Image2 Indonesian sign picture system Image3 Indonesian sign picture system The words used in the Indonesian sign system are the same as Indonesian, the only difference is the way it is done, the following is the example of throwing, throwing using two images, namely the prefix me and the word throwing. TABLE VI. Example words id_basic sign_wor ds oral Image1 Image2 Image3 3001 melem par Source: (Kamus

sistem isyarat bahasa Indonesia:2002) D. Relational database design Relational database is one form of data storage, the table in this model allows it to be able to take relationships from the parent table called the relation table. In this study there are 2 parent tables namely basic_sign_words table and table [13]. Both tables form a relation and become a table that stores additions and principal words into words, these tables are word tables. There are tables that represent repetitions, these tables get relationships from basic_sign_words. 227 repetition word # i d_repetition # id_word Integer o basic_sign_word o id_basic_sign_word Integer o id_afix o oral Relationship_1 Relationship_5 Characters (20) o image1 Image basic sign_words o image2 Image #id_basicsign_wordsInteger o image3 Image o oral Characters (20) o image1 Image Relationship_2 Relationship_3 affix formedsignal # Id_affix Integer # i d_f_s o oral Characters(Relationship_4oid_basic_sign_wordInteger o image1 Image o idaffix o declaration Characters(o image1 Image o image2 Image o image3 Image Fig. 2. Relational database design Indonesia sign system E. Implementation to the mysql database. Database of Signaling Systems Even though Indonesia is made on a MySQL database. Database System for Indonesian Signals is made on MySql because this database is open source, many researchers and academics in Indonesia use a lot of Mysql databases [14,15]. The table structure in the mysql database consists of fields and records. Field, the following is the table structure in basic_sign_words. Fig. 3. Basic_sign_words table structure The basic_sign_words table consists of 3 fields, namely. - The id_sign_word: field is the primary key, this data field type is an integer. - Oral field: this field is used to save sentences in the form of words (alphabetical), the type of oral data field is char - Field image: used to store sign language images. Field type image is BLOB Fig. 4. Record table basic_sign_words The number of words stored in this database reaches 3340 main words taken from the Indonesian sign system dictionary. The word repetition into the database is 80 words. The number of insert words entered is namely -em-, - el-, -er-, -in-. The word affix that is included in this statement is, in, di-, ter-, pe-, per-, and -nya. The word suffix included in this database -kan, -an, -i, and so on. IV. CONCLUSION This study produced a database of Indonesian sign language systems. The database is built with several stages of database creation, namely the semantic object model, relational database design, implementation to the mysql database. The database consists of 2 entity tables and 3 relation tables that are formed from interviews with resource persons and literature studies from dictionaries, these tables are basic words, word additions, repetitions and formations. With database structures and records easy to understand. The number of words stored in this database reaches 3340 main words taken from the Indonesian sign system dictionary. The word repetition into the database is 80 words. The number of insert words entered is namely -em-, - el-, -er-, -in-. The word affix that is included in this statement is, in, di-, ter-, pe-, per- , and –nya. The word suffix included in this database -kan, - an, -i, and -nya. It is hoped that researchers can utilize this database. So that when they want to develop technology related to the sign system that Indonesia researchers do not need to take data and are not constrained by the small number of resource persons, the number of absorption words and the least references related to the deaf sign language system. REFERENCES [1] Kementerian Kesehatan RI, "Situasi Penyandang Disabilitas," Buletin Jendela Data dan Informasi Kesehatan,"Jakarta , vol. 2, pp. 12, December 2014. [2] Z. Xiaojin , E. Mohamed, R. D. Charles, and S, Bradley "A Text-to- Picture Synthesis System for Augmenting Communication,"Madison, , 2015, pp. 53 [3] [4] K. Sven ," Dataset Retrieval", Seventh International Conference on Semantic Computing,:University of Regina, 2013 O. Al-Barahamtoshy and A. Al-Barhamtoshy, "Arabic Text-to-Sign (ArTTS) Model from Automatic SR

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