

**SENTIMENT ANALYSIS OF PRESIDENTIAL CANDIDATES OF
THE REPUBLIC OF INDONESIA USING NAÏVE BAYES
CLASSIFIER AND SUPPORT VECTOR MACHINE**

TUGAS AKHIR

Diajukan Sebagai Salah Satu Syarat
untuk Memperoleh Gelar Sarjana Komputer pada
Program Studi Sistem Informasi

Oleh:

BOBY ANDIKA PUTRA

11950314582



UIN SUSKA RIAU

FAKULTAS SAINS DAN TEKNOLOGI

UNIVERSITAS ISLAM NEGERI SULTAN SYARIF KASIM RIAU

PEKANBARU

2024

Hak Cipta Diindungi Undang-Undang

1. Dilarang mengutip sebagian atau seluruh karya tulis ini tanpa mencantumkan dan menyebutkan sumber:
 - a. Pengutipan hanya untuk kepentingan pendidikan, penelitian, penulisan karya ilmiah, penyusunan laporan, penulisan kritik atau tinjauan suatu masalah.
 - b. Pengutipan tidak merugikan kepentingan yang wajar UIN Suska Riau.
2. Dilarang mengumumkan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.

LEMBAR PERSETUJUAN

***SENTIMENT ANALYSIS OF PRESIDENTIAL CANDIDATES OF
THE REPUBLIC OF INDONESIA USING NAÏVE BAYES
CLASSIFIER AND SUPPORT VECTOR MACHINE***

TUGAS AKHIR

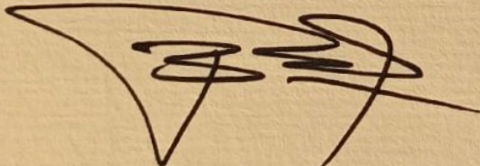
Oleh:

BOBY ANDIKA PUTRA

11950314582

Telah diperiksa dan disetujui sebagai Laporan Tugas Akhir
di Pekanbaru, pada tanggal 15 Januari 2024

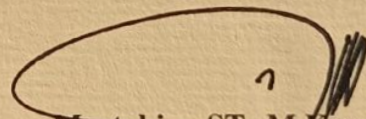
Ketua Program Studi



Eki Saputra, S.Kom., M.Kom.

NIP. 198307162011011008

Pembimbing



Mustakim, ST., M.Kom.

NIK. 130511023

LEMBAR PENGESAHAN

SENTIMENT ANALYSIS OF PRESIDENTIAL CANDIDATES OF THE REPUBLIC OF INDONESIA USING NAÏVE BAYES CLASSIFIER AND SUPPORT VECTOR MACHINE

TUGAS AKHIR

Oleh:


BOBY ANDIKA PUTRA

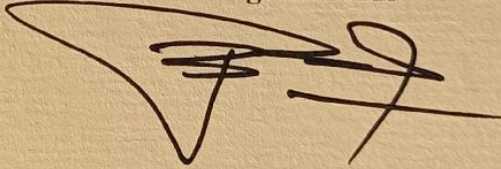
11950314582

Telah dipertahankan di depan sidang dewan penguji
sebagai salah satu syarat untuk memperoleh gelar Sarjana Komputer
Fakultas Sains dan Teknologi Universitas Islam Negeri Sultan Syarif Kasim Riau
di Pekanbaru, pada tanggal 08 Januari 2024

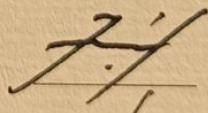
Pekanbaru, 08 Januari 2024

Mengesahkan,

Dekan

Dr. Hartono, M.Pd.
NIP. 196403011992031003

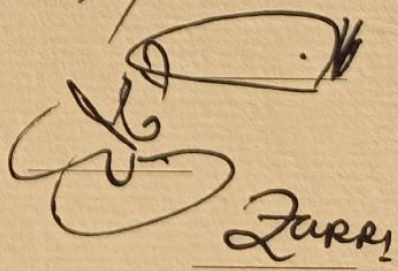
Ketua Program Studi

Eki Saputra, S.Kom., M.Kom.
NIP. 198307162011011008

DEWAN PENGUJI:

Ketua : Dr. Rice Novita, S.Kom., M.Kom. 

Sekretaris : Mustakim, ST., M.Kom.

Anggota 1 : M. Afdal, ST., M.Kom.

Anggota 2 : Zarnelly, S.Kom., M.Sc. 

LEMBAR HAK ATAS KEKAYAAN INTELEKTUAL

Tugas Akhir yang tidak diterbitkan ini terdaftar dan tersedia di Perpustakaan Universitas Islam Negeri Sultan Syarif Kasim Riau adalah terbuka untuk umum, dengan ketentuan bahwa hak cipta ada pada penulis. Referensi kepustakaan diperkenankan dicatat, tetapi pengutipan atau ringkasan hanya dapat dilakukan atas izin peneliti dan harus dilakukan mengikuti kaedah dan kebiasaan ilmiah serta menyebutkan sumbernya.

Penggandaan atau penerbitan sebagian atau seluruh Tugas Akhir ini harus memperoleh izin tertulis dari Dekan Fakultas Sains dan Teknologi Universitas Islam Negeri Sultan Syarif Kasim Riau. Perpustakaan dapat meminjamkan Tugas Akhir ini untuk anggotanya dengan mengisi nama, tanda peminjaman dan tanggal pinjam pada *form* peminjaman.

Hak Cipta Diindungi Undang-Undang

1. Dilarang mengutip sebagian atau seluruh karya tulis ini tanpa mencantumkan dan menyebutkan sumber:
 - a. Pengutipan hanya untuk kepentingan pendidikan, penelitian, penulisan karya ilmiah, penyusunan laporan, penulisan kritik atau tinjauan suatu masalah.
 - b. Pengutipan tidak merugikan kepentingan yang wajar UIN Suska Riau.
2. Dilarang mengumumkan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.



UIN SUSKA RIAU

LEMBAR PERNYATAAN

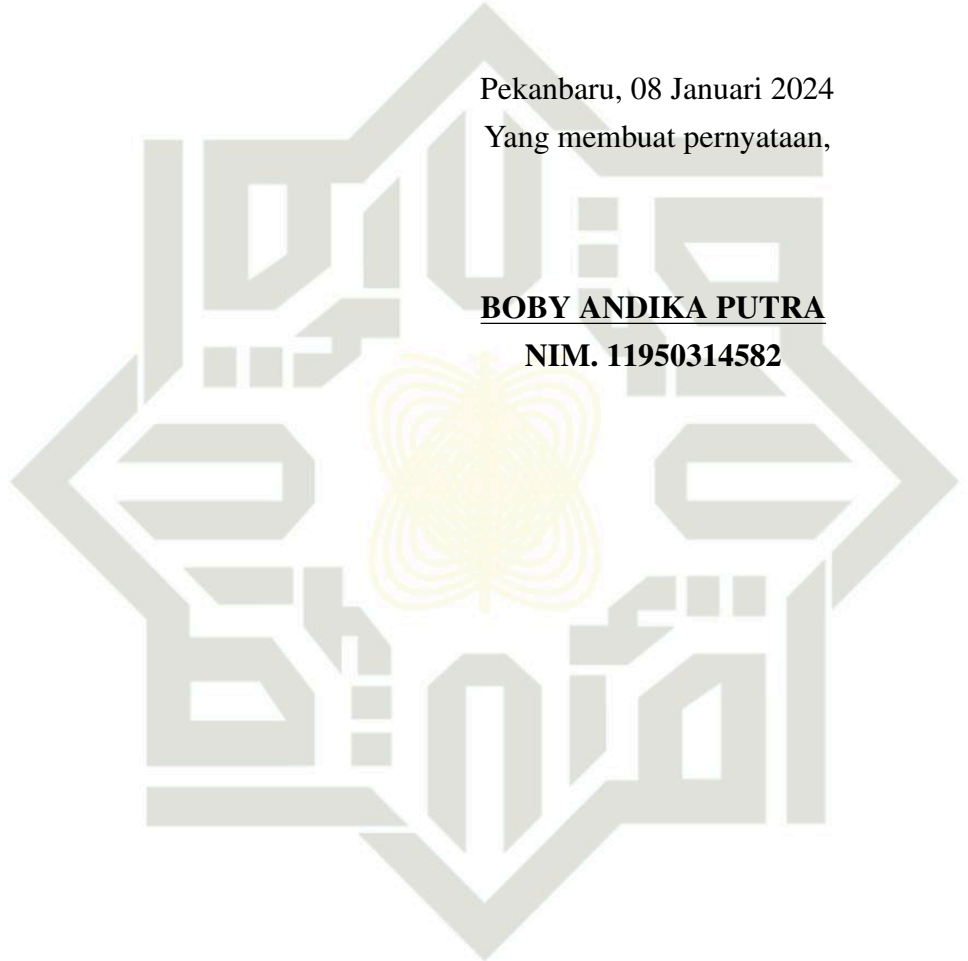
Dengan ini saya menyatakan bahwa dalam Tugas Akhir ini tidak terdapat karya yang pernah diajukan untuk memperoleh gelar kesarjanaan di suatu Perguruan Tinggi, dan sepanjang pengetahuan saya juga tidak terdapat karya atau pendapat yang pernah ditulis atau diterbitkan oleh orang lain kecuali yang secara tertulis diadukan dalam naskah ini dan disebutkan di dalam daftar pustaka.

Pekanbaru, 08 Januari 2024

Yang membuat pernyataan,

BOBY ANDIKA PUTRA

NIM. 11950314582



UIN SUSKA RIAU

Hak Cipta Diindungi Undang-Undang

1. Dilarang mengutip sebagian atau seluruh karya tulis ini tanpa mencantumkan dan menyebutkan sumber:
 - a. Pengutipan hanya untuk kepentingan pendidikan, penelitian, penulisan karya ilmiah, penyusunan laporan, penulisan kritik atau tinjauan suatu masalah.
 - b. Pengutipan tidak merugikan kepentingan yang wajar UIN Suska Riau.
2. Dilarang mengumumkan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.

Hak Cipta Dilindungi Undang-Undang

1. Dilarang mengutip sebagian atau seluruh karya tulis ini tanpa mencantumkan dan menyebutkan sumber:
 - a. Pengutipan hanya untuk kepentingan pendidikan, penelitian, penulisan karya ilmiah, penyusunan laporan, penulisan kritik atau tinjauan suatu masalah.
 - b. Pengutipan tidak merugikan kepentingan yang wajar UIN Suska Riau.
2. Dilarang mengumumkan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.

LEMBAR PERSEMBAHAN



Assalamu'alaikum Warahmatullahi Wabarakatuh.

Alhamdulillah Rabbil'Alamin, puji dan syukur atas kehadiran Allah *Subhanahu Wa Ta'ala* Tuhan semesta alam atas segala nikmat, rahmat, karunia, serta kesempatan dalam menyelesaikan Tugas Akhir ini. Solawat beserta salam tidak lupa pula kita ucapkan kepada Nabi Muhammad *Shallallahu 'Alaihi Wa Sallam* dengan mengucapkan "*Allahumma Sholli'ala Muhammad Wa'ala Ali Muhammad*". Semoga kita semua senantiasa mendapat *syafa'at*-Nya di dunia dan akhirat kelak.

Penulis mempersembahkan Tugas Akhir ini kepada orang yang sangat berjasa dalam kehidupan penulis sebagai bentuk bakti. Terima kasih ayah dan ibu, terima kasih banyak atas semua kasih sayang yang tidak terhingga, *do'a* yang tiada putusnya, sehingga penulis mampu menyelesaikan Tugas Akhir ini dengan baik. Tidak ada ketulusan yang mampu menandingi ketulusan ayah dan ibu dalam membimbing, merawat serta membesarkan penulis. Semoga Allah *Subhanahu Wa Ta'ala* senantiasa selalu memberikan kesehatan dan perlindungan untuk ayah dan ibu, *Aamiin Ya Rabbal Alamiin*.

Terima kasih kepada saudara-saudara penulis dan teman-teman seperjuangan yang selalu memberikan motivasi dan semangat kepada penulis hingga penulis dapat menyelesaikan Tugas Akhir ini. Semoga kita selalu dalam lindungan Allah *Subhanahu Wa Ta'ala*, *Aamiin*.

Wassalamu'alaikum Warahmatullahi Wabarakaatuh.

UIN SUSKA RIAU

KATA PENGANTAR

Assalamu'alaikum Warahmatullahi Wabarakatuh.

Alhamdulillah Rabbil'Alamin, puji dan syukur kehadiran Allah *Subhanahu Wa Ta'ala*, karena dengan Rahmat dan Karunia-Nya sehingga penulis dapat menyusun dan menyelesaikan Laporan Tugas Akhir ini yang berjudul "*Sentiment Analysis of Presidential Candidates of the Republic of Indonesia Using Naïve Bayes Classifier and Support Vector Machine*". Solawat beserta salam tidak lupa diucapkan kepada Nabi Muhammad *Shallallahu 'Alaihi Wa Sallam* dengan mengucapkan *Allahumma Sholli'ala Sayyidina Muhammad Wa'ala Ali Sayyidina Muhammad*.

Penulisan dan penyusunan Laporan Tugas Akhir ini tidak terlepas dengan adanya bantuan dari berbagai pihak, baik yang berupa materi maupun berupa motivasi. Untuk itu pada kesempatan ini penulis mengucapkan banyak terima kasih kepada:

1. Bapak Prof. Dr. Hairunas, M.Ag sebagai Rektor Universitas Islam Negeri Sultan Syarif Kasim Riau.
2. Bapak Dr. Hartono, M.Pd sebagai Dekan Fakultas Sains dan Teknologi.
3. Bapak Eki Saputra, S.Kom., M.Kom sebagai Ketua Program Studi Sistem Informasi.
4. Ibu Siti Monalisa, ST., M.Kom sebagai Sekretaris Program Studi Sistem Informasi.
5. Bapak Tengku Khairil Ahsyar, S.Kom., M.Kom sebagai Kepala Laboratorium Program Studi Sistem Informasi.
6. Bapak Inggih Permana, ST., M.Kom sebagai Dosen Pembimbing Akademik yang telah memberikan arahan dan masukan selama perkuliahan mulai dari Semester 1 hingga Semester 9 ini.
7. Bapak Mustakim, ST., M.Kom sebagai Dosen Pembimbing Tugas Akhir yang telah meluangkan waktu dan membimbing penulis hingga penulis dapat menyelesaikan Laporan Tugas Akhir ini.
8. Bapak M. Afdal, ST., M.Kom sebagai Penguji I Tugas Akhir yang telah memberikan arahan, masukan, serta nasihat dalam penyelesaian Tugas Akhir ini.
9. Ibu Zarnelly, S.Kom., M.Sc sebagai Penguji II Tugas Akhir yang telah memberikan arahan, masukan, serta nasihat dalam penyelesaian Tugas Akhir ini.
10. Ibu Dr. Rice Novita, S.Kom., M.Kom sebagai Ketua Sidang Tugas Akhir dan Dosen Pembimbing Kerja Praktik yang telah memberikan arahan, masukan, serta nasihat dalam penyelesaian Tugas Akhir ini.

11. Para Dosen Program Studi Sistem Informasi Fakultas Sains dan Teknologi Universitas Islam Negeri Sultan Syarif Kasim Riau yang memberikan ilmu yang bermanfaat serta memberikan semangat kepada penulis. Semoga ilmu yang diberikan dapat penulis amalkan dalam kehidupan.
12. Yang teristimewa terima kasih kepada kedua orang tua dan saudara kandung yaitu ayah terhebat, ibu tercinta, kakak, dan adik tersayang sebagai motivator utama dalam penyelesaian Tugas Akhir ini yang telah memberikan dukungan, *do'a*, perhatian, kasih sayang, dan semangat yang tiada hentinya. Terima kasih atas kasih sayang dan cinta yang tidak terhingga yang telah curahkan kepada penulis. Semoga Allah selalu melindungi ayah dan ibu, *Aamiin Ya Rabbal'alamiin*.
13. Kepada orang tersayang Lisa Lestari atas kebersamaan selama ini yang memberikan semangat, bantuan serta waktunya.
14. Kepada teman-teman *Puzzle Research Data Technology* terdiri dari Akhas, Rizky, Adyah, Sania, Umairah, Hilda, Rahweni, Ratna, Ainun, Frendi serta teman-teman Predattech lainnya yang memberi inspirasi dan motivasi kepada penulis.
15. Kepada sahabat seperjuangan Kelas Unggul 2019 yang telah berjuang bersama dalam menuntut ilmu.
- Semoga segala *do'a* dan motivasi yang telah diberikan selama masa perkuliahan menjadi amal kebaikan dan mendapatkan pahala terbaik dari Allah *Subhanahu Wa Ta'ala*. Penulis menyadari bahwa penulisan Laporan Tugas Akhir ini masih terdapat kekurangan, untuk itu kritik dan saran yang bersifat membangun dari semua pihak untuk kesempurnaan Tugas Akhir ini. Penulis berharap Laporan Tugas Akhir ini bermanfaat bagi pembaca dan kita semua khususnya pada bidang Sistem Informasi. Akhir kata penulis mengucapkan terima kasih.

Wassalamu'alaikum Warahmatullahi Wabarakatuh.

Pekanbaru, 16 Januari 2024

Penulis,

BOBY ANDIKA PUTRA
NIM. 11950314582

Hak Cipta Dilindungi Undang-Undang

1. Dilarang mengutip sebagian atau seluruh karya tulis ini tanpa mencantumkan dan menyebutkan sumber:
 - a. Pengutipan hanya untuk kepentingan pendidikan, penelitian, penulisan karya ilmiah, penyusunan laporan, penulisan kritik atau tinjauan suatu masalah.
 - b. Pengutipan tidak merugikan kepentingan yang wajar UIN Suska Riau.
2. Dilarang mengumumkan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.



© Hak Cipta milik UIN Suska Riau

001/CM-ICS23/XI/2023

Tangerang, November 24th 2023

To: Bobby Andika Putra (State Islamic University of Sultan Syarif Kasim Riau, Indonesia); Mustakim Mustakim (Universitas Islam Negeri Sultan Syarif Kasim Riau, Indonesia & Puzzle Research Data Technology, Indonesia); M Afdal (Universitas Islam Negeri Sultan Syarif Kasim Riau, Indonesia)

Dear Authors,

We are pleased to inform you that your manuscript for the 7th International Conference on New Media (CONMEDIA 2023) **has been accepted**, hence you are cordially **invited to present** your paper at the conference. CONMEDIA 2023 is organized by Universitas Multimedia Nusantara (UMN) in partnership with IEEE Indonesia Section, and your paper **will be published** in the IEEE proceedings.

Title : Sentiment Analysis of Presidential Candidates of the Republic of Indonesia Using Naïve Bayes Classifier and Support Vector Machine

Paper ID : 1570962410

The conference will be held on December 6th – 8th, 2023 and will take place in The Patra Bali Resort & Villas, Bali, Indonesia (and virtually via Zoom).

Please proceed with the registration and payment according to the information in <https://conmedia.umn.ac.id>, depending on your attendance type.

Thank you for contributing to our conference. We look forward to your full participation at the 7th CONMEDIA 2023.

Best Regards,

Daren Kusuma Halim
General Chair of CONMEDIA & ICONSONICS 2023

UIN SUSKA RIAU

Hak Cipta Dilindungi Undang-Undang
1. Dilarang mengutip sebagian atau seluruh karya tulis ini tanpa mencantumkan dan menyebutkan sumber:
a. Pengutipan hanya untuk kepentingan pendidikan, penelitian, penulisan karya ilmiah, penyusunan laporan, penulisan kritik atau tinjauan suatu masalah.
b. Pengutipan tidak merugikan kepentingan yang wajar UIN Suska Riau.
2. Dilarang mengumumkan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.



Sentiment Analysis of Presidential Candidates of the Republic of Indonesia Using Naïve Bayes Classifier and Support Vector Machine

Boby Andika Putra

Department of Information Systems,

Universitas Islam Negeri Sultan Syarif Kasim Riau

Pekanbaru, Indonesia

1950314582@students.uin-suska.ac.id

M. Afdal

Department of Information Systems,

Universitas Islam Negeri Sultan Syarif Kasim Riau

Pekanbaru, Indonesia

m.afdal@uin-suska.ac.id

Mustakim

Department of Information Systems,

Universitas Islam Negeri Sultan Syarif Kasim Riau

Pekanbaru, Indonesia

mustakim@uin-suska.ac.id

Zarnelly

Department of Information Systems,

Universitas Islam Negeri Sultan Syarif Kasim Riau

Pekanbaru, Indonesia

zarnelly@uin-suska.ac.id

Abstract— Indonesia, as a democratic country, will hold presidential elections in 2024. The issue of presidential candidates has been discussed since two years before the end of the term of office. Three presidential candidates are emerging, namely Anies Baswedan, Ganjar Pranowo, and Prabowo Subianto. This has resulted in various opinions from the public, including support, neutrality, or putting down certain parties. This study aims to analyze public sentiment towards Indonesian presidential candidates in 2024. Data was collected using a scrapping technique using Python within the last 5 months, starting from May 1 to September 21, 2023. The data was automatically labeled using the Indonesia Sentiment Lexicon (InSet). The labeling results showed that Anies Baswedan received 492 positive sentiments, 2343 negative sentiments, and 121 neutral sentiments. Furthermore, Ganjar Pranowo had 199 positive sentiments, 2608 negative sentiments, and 114 neutral sentiments. Meanwhile, Prabowo Subianto has 900 positive sentiments, 1746 negative sentiments, and 199 neutral sentiments. The data was then processed with Naïve Bayes and Support Vector Machine algorithms to perform sentiment classification. The results show that SVM has higher accuracy than NBC, with an average SVM accuracy of 89.24%, while NBC is only 83.79%. Despite the high accuracy, modeling with the SVM algorithm requires more training time than NBC on all three datasets.

Keywords— Indonesian Presidential Candidates, Naïve Bayes Classifier, Presidential Election, Sentiment Analysis, Support Vector Machine.

I. INTRODUCTION

Indonesia is one of the countries that adheres to the democratic system. This is usually characterized by the election of the president and vice president every 5 years [1]. General elections conducted directly by the Indonesian people began in the reform era after the New Order era collapsed in 2004. The presidential election that will be held in 2019 is a critical moment to realize democracy in the Unitary State of the Republic of Indonesia. Candidates and success teams in the 2019 presidential election can utilize social media to deliver campaign messages. One of the media that is actively used for campaigns is Twitter [2].

The excitement and enthusiasm of the public regarding the candidates is seen in the real world and cyberspace through various social networking sites such as Facebook and Twitter [3]. The issue of presidential candidates will

even be heard 2 years before the term of office expires. This conversation will be warm from public comments, ranging from those who support, do not support, or are neutral. Of course, this conversation does not escape social media, which is increasingly experiencing rapid development, wherever and whenever everyone can access social media. They can access it from the age of children to adults at this time [4].

Based on a Twitter survey from Puspoll Indonesia, the survey was conducted for the last time on May 24, 2021, there were eleven candidate names released. There are the top five which later in this study analyzed the sentiments of the five political figures, including Prabowo Subianto, Anies R. Baswedan, Ganjar Pranowo, Sandiaga Salahuddin Uno, and Ridwan Kamil. From the survey results conducted last time, Prabowo Subianto occupied the most vital position with 20.9 percent of the votes. Followed by DKI Governor Anies Baswedan at 15.4 percent and Ganjar Pranowo at 13.8 percent. Furthermore, there is Sandiaga Uno 7.1 percent and Ridwan Kamil 4.9 percent [5].

From October 1-17, 2022, in terms of news and social media, the popularity of Anis topped the list, followed by Ganjar and Erik, while Sandiaga and Eirlangga were minimally discussed. Muhaimin has the highest favorability with 96% positive tone, followed by Susi and Erik Tohir with 94% sentiment. Another figure with the highest negative sentiment is Agus Harimurti Yudhoyono with 25%, Ganjar at 23%, and Anies at 17%. Furthermore, the most vital figure in one of the 2024 presidential candidates is Prabowo, with several positive associations, "bapak presiden, selamat", which refers to birthday greetings and prays to become president in 2024.

According to Kominfo data, the percentage of social media user statistics in 2022 that are most accessed by the public are YouTube (88%), Whatsapp (84%), Facebook (82%), Instagram (79%), and Twitter (56%) with total internet users reaching 277.7 million or 73.7 of the Indonesian population [6]. Social media is indeed fast-growing. Twitter is a news platform currently in great demand among people. Twitter is a social media often used to disseminate information and express one's feelings [1].

Tweets are content from users in text with a maximum character length of 140 characters. With the character limit,

each tweet makes users more expressive than other social media. With so much data scattered in a tweet that only consists of a few fragments of words, it certainly has valuable information as a source for sentiment analysis [7]. Sentiment analysis is a process to determine the polarity or tendency of a sentence to have positive, negative, or neutral values [8]. On Twitter, opinions, aspirations, or comments from the public can be used to express the events happening and what is expected of the presidential candidate. For these opinions to be utilized and valuable, various processes are needed to obtain important information through sentiment analysis [2].

Sentiment analysis is carried out to see opinions on a problem or event. It can also be used to identify trends in things that are happening to be a topic of conversation to analyze public opinion on a scattered issue [9] [10]. Data on Twitter social media in the form of text can be processed into useful information and knowledge on developing issues. Text mining is a text data mining technique extracted and used as a dataset. Text Mining and Data Mining are perceived as the exact science because the same algorithm can be used in both mining concepts [11]. However, they differ because data mining involves structured data, while text deals with specific features, is relatively unstructured, and requires preprocessing [12].

Puti et al. applied the Naïve Bayes Classifier method to see the public sentiment on Twitter social media towards political figures who will run in the Indonesian presidential election 2024 [13]. In research conducted by A. N. Sari on ranking activities in the ICT faculty of Semarang University using the NBC method for a ranking, namely Favorite and Unfavorite, so that students and the public can find out what activities are in the ICT faculty [14]. Then, the research of N. Utami and Mustakim conducted classification on BAZNAS Riau Mustahik candidate data with PNN, KNN, and NBC algorithms, resulting in NBC as the best with an accuracy of 97.12% [15].

Support Vector Machine (SVM) was first introduced by Vapnik in 1992 as a harmonious series of superior concepts in pattern recognition, the level of accuracy in the model that the transition process in SVM will generate is highly dependent on the kernel function and parameters used [16]. SVM is the best method among several other methods because it can compute data with high dimensions to improve the accuracy rate [17]. Lukmana et al. utilize Twitter social media data with machine learning methods on political data from Twitter related to the sentiment of presidential candidates Jokowi and Prabowo with the SVM algorithm, resulting in 86% accuracy [18].

This research will be carried out by scrapping tweet data and processing it to get text results and labels automatically obtained from several processes, then modeling Naïve Bayes classifiers and Support Vector Machines to classify the processed data[9]. The difference between this research and other research is that this research compares two machine learning algorithms, namely NBC and KNN, to produce a model that can classify the sentiment of presidential candidates. Then the data used is the latest data so as to produce more relevant sentiment. Public sentiment towards Indonesia's presidential candidates is an important issue to discuss. For this reason, this study aims to understand public opinion and provide information in estimating the extent to which each candidate gets support from the public.

II. RESEARCH METHODOLOGY

Each stage in this research is described through a flow chart. This is done so that the analysis is more structured and by the objectives to be achieved. The flow chart of the stages of this research can be seen in Fig. 1.

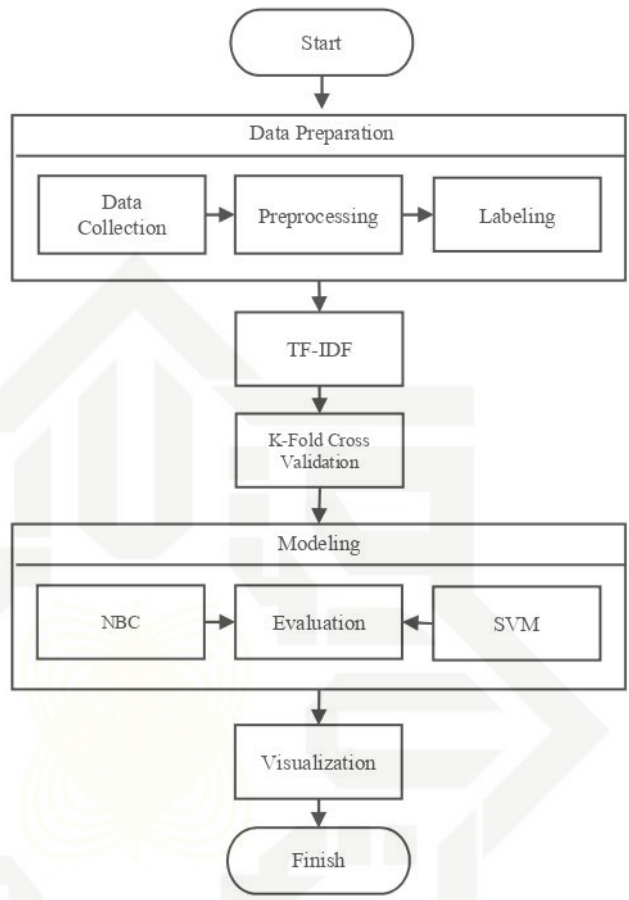


Fig. 1. Research Methodology

A. Data Collection

Data was collected using the Python programming language using scrapping techniques on Twitter social media applications. This process uses resources from the Tweet Harvest Library. The range of data collection starts from May 1, 2023, to September 21, 2023. The data retrieved was tweet data related to issues referring to 3 Indonesian presidential candidates in the 2024 election with keywords in the form of the names of each presidential candidate, namely Anies Baswedan, Ganjar Pranowo, and Prabowo Subianto. The data taken from each of these presidential candidates is 3000, so the total is 9000. Preprocessing

This stage is carried out to prepare the raw data set, specifically text data, to be processed further [19]. There are several stages of the text data preprocessing stage, which are:

1. Cleaning is ridding text data of errors, inconsistencies, and irrelevancies. This process includes removing special characters such as punctuation marks, symbols, and numbers and changing the writing format to lowercase.
2. Tokenizing is breaking down text data into smaller units called tokens. The tokens can be words, phrases, or sentences.



3. Filtering removes words that do not have essential meanings, such as conjunctions, personal pronouns, and others.

4. Stemming converts words into primary or essential forms by removing affixes or endings from words.

B. Split Data

Data splitting is done with the K-Fold Cross Validation technique. This technique divides the data into K equal parts, and then the model will be trained and evaluated K times [20]. In addition, this technique has better accuracy than hold-out to analyze data distribution [21]. In this research, the K-Fold value set is 10, which means that the data will be separated into 10 parts, where 1 part will be the test data and the other 9 will be the training data.

C. Labeling

The dataset collected from the scrapping process is still unsupervised or unlabeled, so it needs to be labeled before modeling. In this research, labeling is done automatically using the Indonesia Sentiment Lexicon (InSet) based on the study of F. Koto and G. Y. Rahmaningtyas by manually weighing each word and refining by adding stemming and synonym sets. In addition, InSet is better than the Indonesian lexicon [22].

D. TF-IDF

Term Frequency-Inverse Document Frequency (TF-IDF) is a statistical measure that describes the importance of a term to a document in a collection or corpus. Term Frequency (TF) is the frequency of occurrence of a term in a document. The more often a term appears, the greater its TF value. Meanwhile, Inverse Document Frequency (IDF) measures the rarity of a term in a collection of documents. The rarer a term appears, the greater the IDF value.

E. Naïve Bayes

Naïve Bayes is a data mining classification algorithm that uses probability and statistical concepts based on Bayes' theorem [20]. The characteristic of the Naïve Bayes algorithm is independence (naïve) from each condition or event [23]. NBC has advantages over other classification methods. It is simple, but this method has high accuracy and performance in classifying text [24]. The formula of the NBC algorithm can be seen in Equation 1.

$$P(X|H) = \frac{P(H|X)P(H)}{P(X)} \quad (1)$$

F. Support Vector Machine

Support Vector Machine was introduced by Vapnik in 1992 as a leading concept in pattern recognition. SVM has become one of the most popular algorithms for classification and regression [20]. The capability of SVM is highly dependent on the kernel function and parameters used. This algorithm can handle computations on high-dimensional data to produce better models [20]. SVM works by finding the best hyperplane that separates two classes in the input space. The SVM algorithm uses training data to form a classification model. The developed model is used to predict new data classes that have never existed before called testing data [20], [25]. SVM is often used in various problems, including pattern recognition, bioinformatics, and text categorization, by decomposing the hyperplane as an input set into a feature

space consisting of two classes but then re-optimized so that it can be used in the form of more than two classes [26].

G. Evaluation

To find out how good the model's ability is, it is necessary to evaluate it. Good model performance certainly has high accuracy, precision, and recall. We can calculate accuracy using equation 2, precision with equation 3, and recall with equation 4 [27].

$$Accuracy = \frac{TP+TN}{TP+TN+FP+FN} \quad (2)$$

$$Precision = \frac{TP}{TP+FP} \quad (3)$$

$$Recall = \frac{TP}{TP+FN} \quad (4)$$

H. Visualization

Visualization is the last stage in this research. The purpose of data visualization is to facilitate analysis and find out the words that often appear in each candidate for president of Indonesia in 2024.

III. RESULT AND DISCUSSION

The data in this research was taken through Twitter social media using the scrapping technique with the Python programming language. The keywords in the tweets taken were Indonesian presidential candidates in 2024, namely "Anies Baswedan", "Ganjar Pranowo" and "Prabowo Subianto". The data was collected for the last 5 months, from May 1, 2023, to September 21, 2023. The amount of data obtained from each presidential candidate is 3000 data, which in total is 9000 data. However, the data collected still does not consider whether the account tweeting is propaganda or bias. The dataset obtained through scrapping results can be seen in Table I.

TABLE I SCRAPPING RESULTS DATASET

No	Username	Tweet	Created At
1	abhi_go0	Mendukung penuh sebagai calon presiden Indonesia. Ketua Konfederasi Serikat Pekerja Seluruh Indonesia (KSPSI), Andi Gani Nena Wea mengatakan, pihaknya mantap untuk all out memenangkan capres Ganjar Pranowo pada Pilpres 2024 #BuruhDukungGanjar #GanjarMenangTotal https://t.co/zrqopYSAF7	Mon May 01 23:56:47 +0000 2023
2	ZahraAldyaz	Banyak Relawan Dukung Ganjar Pranowo di Pilpres 2024. https://t.co/BrM5NmZEIa	Fri May 05 23:47:06 +0000 2023
3	Pendkr	@ganjarpranowo PERCAYALAH RAKYAT SUDAH MUAH DG PDIP. APALAGI PETUGASNYA! Kita buktikan ya	Sun May 14 23:57:35 +0000 2023
...
3000	TriYsanto33621	Breaking news Saat Adzan ada ganjar bukan politik identitas. Itu contoh jenis manusia tipe abu2. Baca puisi yg nyinyirin suara	Sun Sep 10 23:58:49 +0000 2023



adzan Tuhan dekat tapi suara adzan kok keras juga sekaligus jadi iklan adzan maghrib di reti dan mnc. Abu2 bliss No viral no justice @dennyindrayana

The next stage is data preprocessing. The initial preprocessing process is cleaning by converting text into lowercase letters and removing characters other than letters, such as numbers, symbols, links, punctuation marks, and others. The following process is tokenizing, which breaks the sentence into fragments of words called tokens. Then, filtering removes words with no meaning, such as conjunctions or others, using the Natural Language Toolkit (NLTK) library. Stemming is the last process of preprocessing. This stage will convert words into essential words by removing affixes or suffixes from words using the Sastrawi library.

After going through the preprocessing stage, there was a change in the number of datasets due to the removal of words that did not have meaning in the cleaning, filtering, and stemming processes. The current datasets are 2956 for Anies Baswedan, 2925 for Ganjar Pranowo, and 2944 for Prabowo Subianto. The total current data, when summed up, is 8825 data.

The preprocessed data is automatically labeled with the Indonesia Sentiment Lexicon (InSet). In the dictionary, each word in the sentence will have its score calculated. The sentence will be designated as negative sentiment when the accumulated score is below zero or negative. In contrast, when it is above zero or positive, it will be defined as a positive sentiment, and if the result is zero, it will be defined as neutral. The results of the data labeling of the three Indonesian presidential candidates can be seen in Fig. 2.

TABLE II. DATASET LABELING RESULT

Dataset	Sentiment		
	Negative	Neutral	Positive
Anies Baswedan	2343	121	492
Ganjar Pranowo	2608	114	199
Prabowo Subianto	1746	199	900

The next stage is to do TF-IDF to get the value or weight of a word. The more often a term appears, the more it will affect the weight value. TF-IDF calculation is done using Python with the help of the Sckit-Learn library. The results of the TF-IDF implementation can be seen in Table III.

TABLE III. TF-IDF IMPLEMENTATION RESULTS

dukung	pilih	pimpin	prestasi	salah	...	tolol
0,0976	0,0000	0,0000	0,0000	0,0000	...	0,0000
0,1339	0,0000	0,1679	0,2041	0,1973	...	0,0000
0,0783	0,0000	0,0000	0,0000	0,1154	...	0,2979
0,0822	0,0953	0,1030	0,0000	0,0000	...	0,0000
...
0,0000	0,0000	0,0000	0,1934	0,1869	...	0,0000

Sentiment modeling of Indonesian presidential candidates is done by utilizing two algorithms, namely NBC with Gaussian kernel and SVM with Radial Basis Function (RBF)

kernel. The implementation of the RBF kernel is because the kernel can well classify non-linear data, especially text-based. Then, the K-Fold Cross Validation technique with 10-Fold is carried out. This technique is used because it is considered capable of obtaining maximum results when modeling [27]. Implementation of modeling is done using Python and utilizing the Scikit-Learn library. The modeling stage is carried out with the aim of automating the sentiment analysis process based on models that have been trained based on previous data. The following are the results of the sentiment analysis modeling of Indonesian presidential candidates.

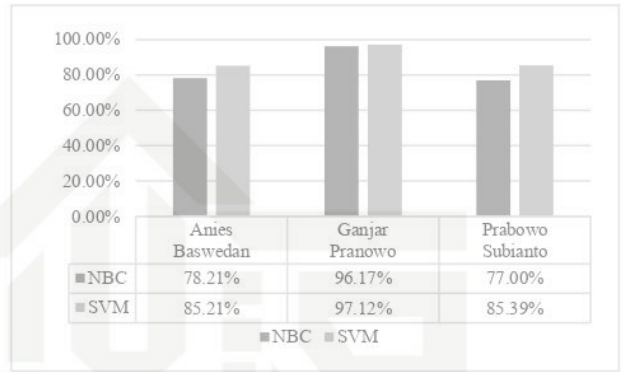


Fig. 2. Comparison of NBC and SVM Accuracy

The modeling results with the NBC and SVM algorithms show that SVM has a higher sentiment classification accuracy than NBC on the three Indonesian presidential candidate datasets, with an average SVM accuracy of 89.24%, while NBC is 83.79%. SVM and NBC have the highest accuracy on the same dataset, namely the Ganjar Pranowo dataset, with SVM accuracy of 97.12% and NBC of 97.12%. Despite having high accuracy, SVM has a slight drawback in that it takes more time to train compared to NBC from modeling the three datasets.

To find out the words that often appear in the tweets of Twitter social media users towards the three Indonesian presidential candidates, it is necessary to carry out a data visualization stage. In the Anies Baswedan presidential candidate dataset, there are 5 words with the most occurrences, which are 'anies', 'baswedan', 'dukung', 'ganjar', and 'pilih'. From these words, it can be concluded that the public gave the invitation to vote for Anies Baswedan, which was marked by the words 'dukung' and 'pilih'. In addition, people also compared Anies Baswedan's candidate with his competitor, Ganjar Pranowo, which was marked by the appearance of the word 'ganjar'. The following results from visualizing words often appearing from public sentiment on presidential candidate Anies Baswedan.



Fig. 3. Data Visualization on Anies Baswedan Dataset



Then, in the dataset of presidential candidate Ganjar Pranowo, there are 5 words with the most occurrences, which are 'ganjar', 'pranowo', 'dukung', 'prabowo', and 'pilih'. From these words, it can be concluded that people are also invited to vote for Ganjar Pranowo, marked by the words 'dukung' and 'pilih'. In addition, people also compared candidate Ganjar Pranowo with his competitor, Prabowo Subianto, which was marked by the occurrence of the word 'prabowo'. Here are the results of the visualization of words that often appear from people's sentiments toward presidential candidate Ganjar Pranowo.



Fig. 4. Data Visualization on Ganjar Pranowo Dataset

Finally, in the Prabowo Subianto presidential candidate dataset, there were 5 words with the most occurrences, which are 'prabowo', 'dukung', 'pilih', 'ganjar', and 'anies'. From these words, it can be concluded that the public also gave the invitation to vote for Prabowo Subianto, which was marked by the words 'dukung' and 'pilih'. In addition, people also compared candidate Ganjar Pranowo with his two competitors, namely Ganjar Pranowo, which was marked by the occurrence of the word 'ganjar' and Anies Baswedan which was marked by the occurrence of the word 'anies'. The following are the results of the visualization of words that often appear from the public sentiment on presidential candidate Prabowo Subianto.



Fig. 5. Data Visualization on Prabowo Subianto Dataset

The visualization results show that each sentiment provides an opinion in the form of support for choosing a presidential candidate by a particular party and compares one candidate with other presidential candidates.

Through data collection with scrapping techniques for the last 5 months, Anies Baswedan has 492 positive sentiments, 2,433 negative sentiments, and 121 neutral sentiments. Furthermore, in the Ganjar Pranowo dataset, 199 positive sentiments, 2608 negative sentiments, and 114 neutral sentiments were obtained. Then, in the Prabowo Subianto dataset, 900 positive sentiments, 1746 negative sentiments, and 199 neutral sentiments were obtained. The data was then used for modeling with NBC and SVM algorithms. As a

result, SVM has a higher accuracy than NBC on the three Indonesian presidential candidate datasets, with an average SVM accuracy of 89.24%, while NBC is 83.79%. From the results of the analysis through visualization, it shows that the sentiment contains opinions to vote for the supported presidential candidate and compare one candidate with another.

IV. CONCLUSION

The research analyzed public sentiment about Indonesian presidential candidates in 2024, namely Anies Baswedan, Ganjar Pranowo, and Prabowo Subianto. Data was collected using Python scrapping techniques with a data collection range of the last 5 months, from May 1, 2023 - September 21, 2023. Data labeling was done automatically using the Indonesia Sentiment Lexicon (InSet). The labeling stage resulted in Anies Baswedan having 492 positive sentiments, 2343 negative sentiments, and 121 neutral sentiments. Furthermore, in the Ganjar Pranowo dataset, 199 positive sentiments, 2608 negative sentiments, and 114 neutral sentiments were obtained. Then, in the Prabowo Subianto dataset, 900 positive sentiments, 1746 negative sentiments, and 199 neutral sentiments were received. The data that has been labeled is then processed with the NBC and SVM algorithms to perform sentiment classification. As a result, SVM has a higher accuracy than NBC on the three Indonesian presidential candidate datasets, with an average SVM accuracy of 89.24%, while NBC is 83.79%. Despite having high accuracy, SVM has a slight drawback that requires more time to train compared to NBC from modeling the three datasets. The visualization results show that the sentiment provides opinions for choosing presidential candidates supported by certain parties and compares one candidate with another.

REFERENCES

- [1] L. D. Mahbubah and E. Zuliarso, "Analisa Sentimen Twitter Pada Pilpres 2019 Menggunakan Algoritma Naive Bayes," *Sintak*, pp. 194-195, 2019.
- [2] I. Kurniawan and A. Susanto, "Implementasi Metode K-Means dan Naive Bayes Classifier untuk Analisis Sentimen Pemilihan Presiden (Pilpres) 2019," *Eksplora Informatika*, vol. 9, no. 1, pp. 1-10, 2019, doi: 10.30864/eksplora.v9i1.237.
- [3] R. Ardiansyah, "Analisis Sentimen Calon Presiden Dan Wakil Presiden Periode 2019-2024 Pasca Debat Pilpres Di Twitter," *ScientiCO: Computer Science and Informatics Journal*, vol. 2, no. 1, p. 21, 2019, doi: 10.22487/j26204118.2019.v2.i1.13068.
- [4] N. A. O. Saputri and K. Zuhri, "Analisis Sentimen Masyarakat Terhadap Pilpres 2019 Berdasarkan Opini Dari Twitter Menggunakan Metode Naive Bayes Classifier," *INFORMANIKA*, vol. 7, no. 1, pp. 259-269, 2021, doi: 10.52233/informanika.v7i01.201.
- [5] G. Nugroho, D. T. Murdiansyah, and K. M. Lhaksana, "Analisis Sentimen Pemilihan Presiden Amerika 2020 di Twitter Menggunakan Naive Bayes dan Support Vector Machine," vol. 8, no. 5, pp. 10106-10115, 2021.
- [6] A. A. Murtopo and N. Fadilah, "Tinjauan Pustaka Sistematis: Klasifikasi Ujaran Kebencian Pada Sosial Media dengan Algoritma Neural Network," *Indonesian Journal of Informatics and Research*, vol. 3, no. 1, pp. 49-



2. Diarangi mengumumkan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.
- a. Pengutipan hanya untuk kepentingan pendidikan, penelitian, penulisan karya ilmiah, penyusunan laporan, penulisan kritik atau tinjauan suatu masalah.
b. Pengutipan tidak merugikan kepentingan yang wajar UIN Suska Riau.
- [7] G. Widarma, R. Novita, Mustakim, and N. E. Rozanda, "Comparing Classification Algorithms to Analyze Twitter Sentiment on Public Opinion on Fuel Oil," in *International Seminar on Intelligent Technology and Its Applications (ISITIA)*, 2023, pp. 648–653, doi: 10.1109/ISITIA59021.2023.10221118.
- [8] A. C. Najib, A. Irsyad, G. A. Qandi, and N. A. Rakhmawati, "Perbandingan Metode Lexicon-based dan SVM untuk Analisis Sentimen Berbasis Ontologi pada Kampanye Pilpres Indonesia Tahun 2019 di Twitter," *Fountain of Informatics Journal*, vol. 4, no. 2, p. 41, 2019, doi: 10.24111/fij.v4i2.3573.
- [9] M. Munasatya and S. Novianto, "Natural Language Processing untuk Analisis Sentimen Presiden Jokowi Menggunakan Multi Layer Perceptron Natural Language Processing for President Jokowi Sentiment Analysis using Multi Layer Perceptron," *Techno.COM*, vol. 19, no. 3, pp. 237–244, 2020.
- [10] A. Pandu *et al.*, "Analisis Sentimen Twitter Pasca Pengumuman Hasil Pilpres 2019 Menggunakan Metode Lexicon Analysis," *Jurnal Teknik Informatika*, vol. 15, no. 1, pp. 33–44, 2020.
- [11] F. A. Wenando, R. Hayami, and A. J. Anggrawan, "Analisis Sentimen Pada Pemerintahan Terpilih Pada Pilpres 2019 Di Twitter Menggunakan Algoritme Naïvebayes," *JURTEKSI (Jurnal Teknologi dan Sistem Informasi)*, vol. 7, no. 1, pp. 101–106, 2020, doi: 10.33330/jurteksi.v7i1.851.
- [12] A. K. Fauziyyah, "Analisis Sentimen Pandemi Covid19 Pada Streaming Twitter Dengan Text Mining Python," *Jurnal Ilmiah SINUS*, vol. 18, no. 2, p. 31, 2020, doi: 10.30646/sinus.v18i2.491.
- [13] P. Pasek, O. Mahawardana, G. Arya, I. P. Agus, and E. Pratama, "Analisis Sentimen Berdasarkan Opini dari Media Sosial Twitter terhadap ' Figure Pemimpin ' Menggunakan Python," *JITTER-Jurnal Ilmiah Teknologi dan Komputer*, vol. 3, no. 1, pp. 810–820, 2022.
- [14] A. N. Putri, "Penerapan Naive Bayesian Untuk Perankingan Kegiatan Di Fakultas Tik Universitas Semarang," *Simetris : Jurnal Teknik Mesin, Elektro dan Ilmu Komputer*, vol. 8, no. 2, p. 603, 2017, doi: 10.24176/simet.v8i2.1545.
- [15] M. Utami and Mustakim, "Data Distribution Modelling in Supervised Learning Algorithm is for The classification of Prospective Recipient Candidate," in *4th International Seminar on Research of Information Technology and Intelligent Systems (ISRITI)*, 2021, pp. 593–597, doi: 10.1109/ISRITI54043.2021.9702783.
- [16] A. Rahman Isnain, A. Indra Sakti, D. Alita, and N. Satya Marga, "Sentimen Analisis Publik Terhadap Kebijakan Lockdown Pemerintah Jakarta Menggunakan Algoritma Svm," *Jdmst*, vol. 2, no. 1, pp. 31–37, 2021.
- [17] P. Arsi and R. Waluyo, "Analisis Sentimen Wacana Pemindehan Ibu Kota Indonesia Menggunakan Algoritma Support Vector Machine (SVM)," *Jurnal Teknologi Informasi dan Ilmu Komputer*, vol. 8, no. 1, p. 147, 2021, doi: 10.25126/jtiik.0813944.
- [18] D. T. Lukmana, S. Subanti, and Y. Susanti, "Analisis Sentimen Terhadap Calon Presiden 2019 Dengan Support Vector Machine Di Twitter," *Seminar Nasional Penelitian Pendidikan Matematika (SNP2M) 2019 UMT*, no. 2002, pp. 154–160, 2019.
- [19] S. Term and M. Model, "Analisis Sentimen Publik Twitter terhadap Pemilu 2024 menggunakan Model Long Short Term Memory Sentiment Analysis Public Twitter on 2024 Election using the Long Short Term Memory Model," vol. 12, pp. 52–60, 2024.
- [20] A. Rahmadeyan and Mustakim, "Seleksi Fitur pada Supervised Learning: Klasifikasi Prestasi Belajar Mahasiswa Saat dan Pasca Pandemi COVID-19," *Jurnal Nasional Teknologi dan Sistem Informasi*, vol. 9, no. 1, pp. 21–32, 2023, doi: 10.25077/TEKNOSI.v9i1.2023.21-32.
- [21] Mustakim and R. Novita, "The Implementation of Probabilistic Neural Networks to Sentiment Analysis of National Principle and Religion Issues in Indonesia," *Journal of System and Management Sciences*, vol. 13, no. 5, pp. 311–321, 2023, doi: 10.33168/JSMS.2023.0520.
- [22] Fajri Koto and Gemala Y. Rahmaningtyas, "InSet Lexicon: Evaluation of a Word List for Indonesian Sentiment Analysis in Microblogs," in *International Conference on Asian Language Processing (IALP)*, 2017, pp. 391–394, doi: 10.1109/IALP.2017.8300625.
- [23] M. Suhendra, W. Swastika, and M. Subianto, "Analisis Sentimen Pada Ulasan Aplikasi Video Conference Menggunakan Naive Bayes," *Sainsbertek Jurnal Ilmiah Sains & Teknologi*, vol. 2, no. 1, pp. 1–9, 2021, doi: 10.33479/sb.v2i1.145.
- [24] Ridwan and A. Susano, "Aplikasi Email Client Multi-Platform Dengan Enkripsi Data Berbasis Java," *Jurnal Indonesia: Manajemen Informatika dan Komunikasi*, vol. 4, no. 1, pp. 279–290, 2023, doi: 10.35870/jimik.v4i1.177.
- [25] E. Suryati, S. Styawati, and A. A. Aldino, "Analisis Sentimen Transportasi Online Menggunakan Ekstraksi Fitur Model Word2vec Text Embedding Dan Algoritma Support Vector Machine (SVM)," *Jurnal Teknologi dan Sistem Informasi*, vol. 4, no. 1, pp. 96–106, 2023, doi: 10.33365/jtsi.v4i1.2445.
- [26] M. R. Qisthiano, I. Ruswita, and P. Armilia, "Implementasi Metode SVM dalam Analisis Sentimen Mengenai Vaksin dengan Menggunakan Python 3," *Teknologi: Jurnal Ilmiah Sistem Informasi*, vol. 13, no. 1, pp. 1–7, 2023, doi: 10.26594/teknologi.v13i1.3105.
- [27] P. F. Pratama, D. Rahmadani, R. S. Nahampun, D. Harnutika, A. Rahmadeyan, and M. F. Evizal, "Random Forest Optimization Using Particle Swarm Optimization for Diabetes Classification," *Public Research Journal of Engineering, Data Technology and Computer Science*, vol. 1, no. 1, pp. 41–46, 2023.

Hak Cipta Diindungi Undang-Undang

1. Diarangi mengutip sebagian atau seluruh karya tulis ini tanpa mencantumkan dan menyebutkan sumber:
 - a. Pengutipan hanya untuk kepentingan pendidikan, penelitian, penulisan karya ilmiah, penyusunan laporan, penulisan kritik atau tinjauan suatu masalah.
 - b. Pengutipan tidak merugikan kepentingan yang wajar UIN Suska Riau.
2. Diarangi mengumumkan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.

LAMPIRAN A

SERTIFIKAT CONFERENCE



CALL for PAPER

06 - 08
DEC 2023

The Patra Bali
Resort & Villas, Kuta

(Virtual attendance option
available via Zoom)

Rethinking Technology in Driving A Sustainable Future for The Earth and Humanity

Joint Conference

- ◆ 7th CONMEDIA (International Conference on New Media Studies)
- ◆ 3rd ICON-SONICS (International Conference On Smart Cities, Automation & Intelligent Computing Systems)

ICON-SONICS Tracks

- ◆ Smart Cities
- ◆ Automations
- ◆ Intelligent Computing Systems

Important Dates

Submission Due	15 September 2023 12 October 2023
Decision Notification	15 October 2023 26 October 2023
Camera-ready Paper	04 November 2023 15 November 2023
Payment Due (Early Bird)	01 November 2023
Conference Day	06-08 December 2023

Registration Fee

Participant	Category	On-site		Virtual	
		Early Bird (Before 1 Nov 2023)	Late Registration	Early Bird (Before 1 Nov 2023)	Late Registration
International Participant	IEEE Member	USD 300	USD 335	USD 190	USD 225
	Non IEEE Member	USD 350	USD 385	USD 235	USD 270
	Student IEEE Member	USD 200	USD 235	USD 110	USD 135
	Student Non IEEE Member	USD 250	USD 285	USD 140	USD 175
	Audience	USD 125	USD 150	USD 50	USD 75
Local Participant	IEEE Member	Rp 3.000.000	Rp 3.350.000	Rp 2.000.000	Rp 2.350.000
	Non IEEE Member	Rp 3.500.000	Rp 3.850.000	Rp 2.500.000	Rp 2.850.000
	Student IEEE Member	Rp 2.000.000	Rp 2.500.000	Rp 1.300.000	Rp 1.500.000
	Student Non IEEE Member	Rp 2.500.000	Rp 3.000.000	Rp 1.650.000	Rp 2.000.000
	Audience	Rp 1.500.000	Rp 2.000.000	Rp 600.000	Rp 800.000
Others	Additional Paper	150 / 2.250.000			
	Additional Page (after 6 pages)	50 / 600.000			

* Tour Bali with us on the 8th December 2023, for only additional Rp200.000 / US\$15 (Lunch and dinner included. Bus pool from The Patra Bali Resort & Villas)

CONMEDIA Tracks

- ◆ Applications
- ◆ Mobile Technology
- ◆ Interactive Media Design
- ◆ Business Intelligence and Management
- ◆ Strategic Information System
- ◆ Computational Science and Technology
- ◆ Embedded Systems and Communication

IEEE Catalog Number

	Media Type Requested	Part Number	ISBN
CONMEDIA	XPLORÉ COMPLIANT	CFP2303X-ART	979-8-3503-0750-4
	USB	CFP2303X-USB	979-8-3503-0749-8
ICONSONICS	XPLORÉ COMPLIANT	CFP23SON-ART	979-8-3503-1829-6
	USB	CFP23SON-USB	979-8-3503-1828-8

Keynote Speakers



Teguh Prasetya

General Chair, Asosiasi IoT Indonesia
CEO, PT. Alita Praya Mitra



Prof. Madya Dr. Danial Md Nor

Universiti Tun Hussein Onn Malaysia



Prof. Veera Sekaran

Head, Regenerative Agritech Centre,
Dept of Biological Sciences
National University of Singapore



Prof. Huang-Jen Chiu

National Taiwan University of
Science and Technology



Reach us through
<https://iconsonics.umn.ac.id>
<https://conmedia.umn.ac.id>

Email
conmedia@umn.ac.id
iconsonics@umn.ac.id



Hak Cipta Diindungi Undang-Undang

1. Diarangi mengutip sebagian atau seluruh karya tulis ini tanpa mencantumkan dan menyebutkan sumber:
 - a. Pengutipan hanya untuk kepentingan pendidikan, penelitian, penulisan karya ilmiah, penyusunan laporan, penulisan kritik atau tinjauan suatu masalah.
 - b. Pengutipan tidak merugikan kepentingan yang wajar UIN Suska Riau.
2. Diarangi mengumumkan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.

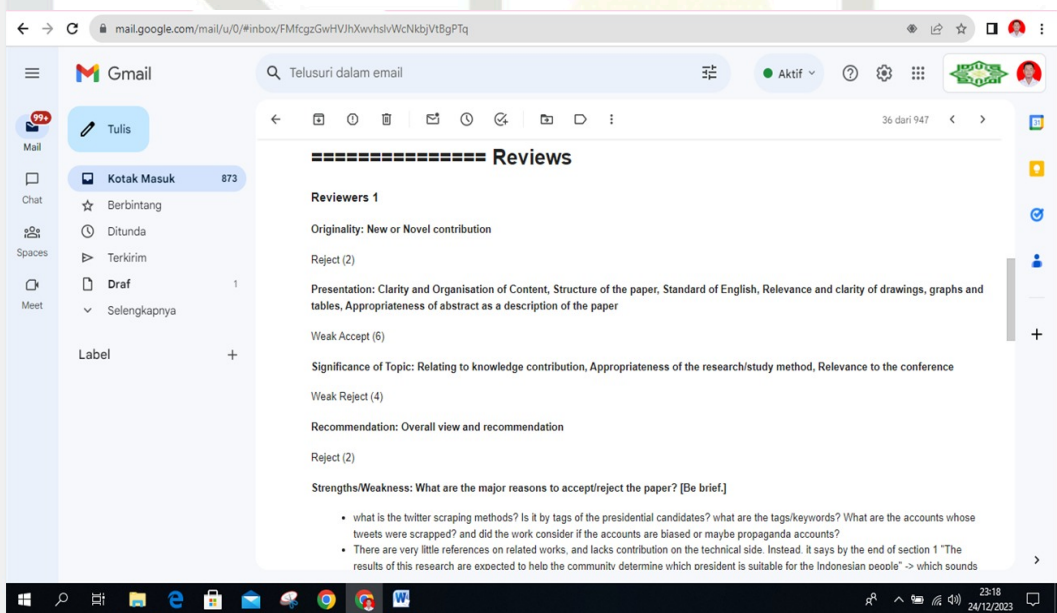
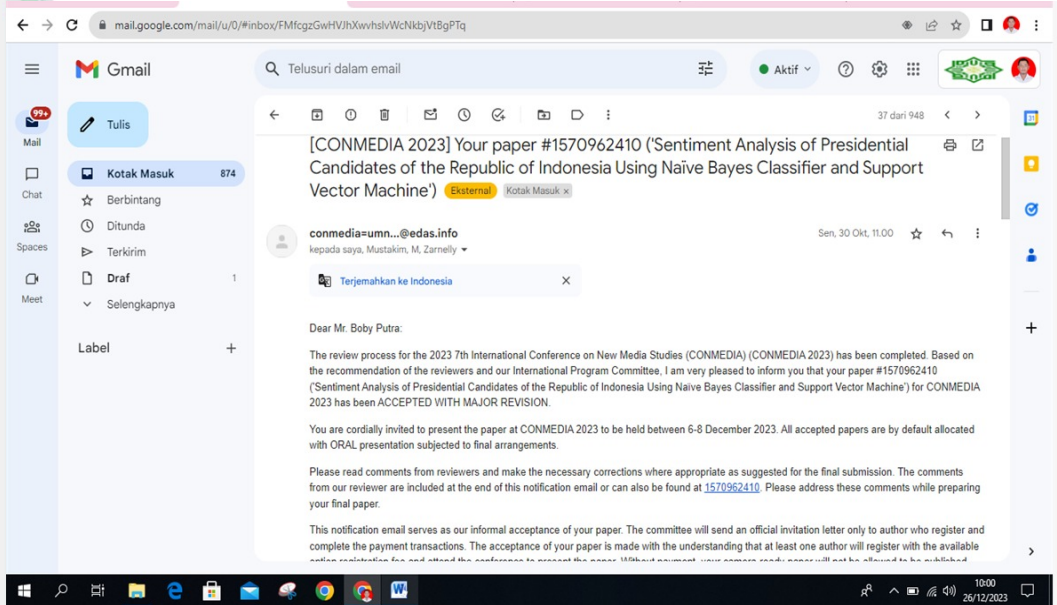


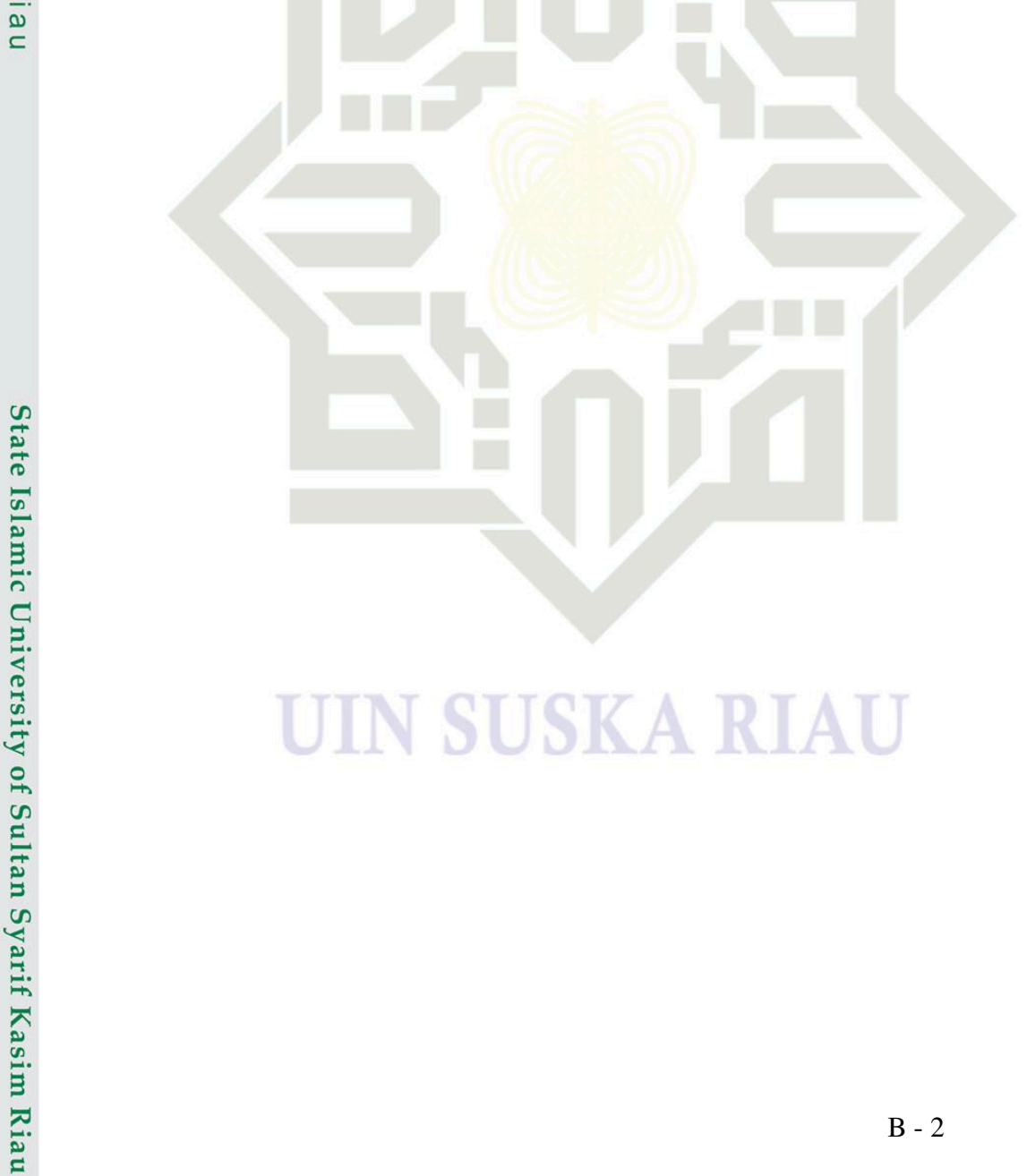
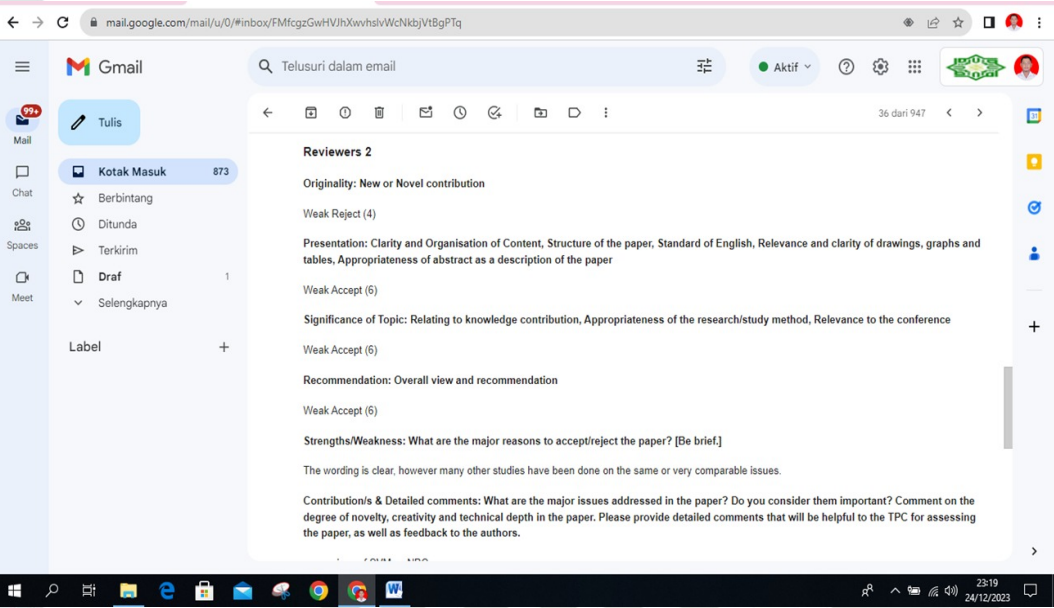
LAMPIRAN B

NOTIFIKASI EMAIL

Hak Cipta Dilindungi Undang-Undang

1. Diarangi mengutip sebagian atau seluruh karya tulis ini tanpa mencantumkan dan menyebutkan sumber:
 - a. Pengutipan hanya untuk kepentingan pendidikan, penelitian, penulisan karya ilmiah, penyusunan laporan, penulisan kritik atau tinjauan suatu masalah.
 - b. Pengutipan tidak merugikan kepentingan yang wajar UIN Suska Riau.
2. Diarangi mengumumkan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.





Hak Cipta Diindungi Undang-Undang

1. Dilarang mengutip sebagian atau seluruh karya tulis ini tanpa mencantumkan dan menyebutkan sumber:
 - a. Pengutipan hanya untuk kepentingan pendidikan, penelitian, penulisan karya ilmiah, penyusunan laporan, penulisan kritik atau tinjauan suatu masalah.
 - b. Pengutipan tidak merugikan kepentingan yang wajar UIN Suska Riau.
2. Dilarang mengumumkan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.



DAFTAR RIWAYAT HIDUP

Penulis lahir Sukadamai, 16 Mei 2001. Penulis anak dari Bapak Agus Gunawan dan Ibu Nurjanah yang bernama Bobby Andika Putra. Penulis bertempat tinggal di Jalan Sukakarya, Kecamatan Pematang Tebih, Kabupaten Rokan Hulu. Penulis menempuh pendidikan yang diawali dari pendidikan di SDN 015 Ujung Batu pada tahun 2007-2013. Setelah menempuh pendidikan Sekolah Dasar, penulis melanjutkan pendidikan di MT-SN Jeruk Manis tahun 2013-2016, dan dilanjutkan di SMAN 1 Ujung Batu tahun 2016-2019 dengan jurusan Ilmu Penguasaan Sosial (IPS). Setelah menyelesaikan pendidikan dibangku sekolah, penulis melanjutkan pendidikan Strata Satu (S1) di Universitas Islam Negeri Sultan Syarif Kasim Riau, tepatnya Fakultas Sains dan Teknologi Jurusan Sistem Informasi tahun 2019. Selama masa perkuliahan, penulis bergabung dalam beberapa organisasi kampus yaitu *Puzzle Research Data Technology* (Predatech), dan Himpunan Mahasiswa. Dalam organisasi Predatech, penulis banyak mendapatkan pengalaman sebagai Anggota hingga Koordinator Mahasiswa 2022/2023. Pada penelitian Tugas Akhir, penulis mengambil topik data mining dengan judul "*Sentiment Analysis of Presidential Candidates of the Republic of Indonesia Using Naïve Bayes Classifier and Support Vector Machine*". Untuk menjalin komunikasi yang baik dengan penulis baik dari dalam kampus maupun luar kampus dapat menghubungi kontak melalui email bobyandika917@gmail.com.

Hak Cipta Diindungi Undang-Undang

1. Dilarang mengutip sebagian atau seluruh karya tulis ini tanpa mencantumkan dan menyebutkan sumber:
 - a. Pengutipan hanya untuk kepentingan pendidikan, penelitian, penulisan karya ilmiah, penyusunan laporan, penulisan kritik atau tinjauan suatu masalah.
 - b. Pengutipan tidak merugikan kepentingan yang wajar UIN Suska Riau.
2. Dilarang mengumumkan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.



Lampiran Surat :

Nomor : Nomor 25/2024

Tanggal : 10 Januari 2024

SURAT PERNYATAAN

Saya yang bertandatangan di bawah ini :

Nama : Bobby Andika Putra

NIM : 11950314582

Tempat/ Tgl. Lahir : Sukadama 16 Mei 2001

Fakultas/Pascasarjana : Sains dan Teknologi

Prodi : Sistem Informasi

Judul Disertasi/Thesis/Skripsi/Karya Ilmiah lainnya*:

SENTIMENT ANALYSIS OF PRESIDENTIAL CANDIDATES OF THE REPUBLIC OF
INDONESIA USING NATIVE BAYES CLASSIFIER AND SUPPORT VECTOR MACHINE

Menyatakan dengan sebenar-benarnya bahwa :

1. Penulisan Disertasi/Tesis/Skripsi/Karya Ilmiah lainnya* dengan judul sebagaimana tersebut di atas adalah hasil pemikiran dan penelitian saya sendiri.
2. Semua kutipan pada karya tulis saya ini sudah disebutkan sumbernya.
3. Oleh karena itu Disertasi/Tesis/Skripsi/Karya Ilmiah lainnya* saya ini, saya nyatakan bebas dari plagiat.
4. Apa bila dikemudian hari terbukti terdapat plagiat dalam penulisan Disertasi/Tesis/Skripsi/(Karya Ilmiah lainnya)* saya tersebut, maka saya bersedia menerima sanksi sesuai peraturan perundang-undangan.

Demikian Surat Pernyataan ini saya buat dengan penuh kesadaran dan tanpa paksaan dari pihak manapun juga.

Pekanbaru, 10 Januari 2024

Yang membuat pernyataan



Bobby Andika Putra
NIM : 11950314582

Hak Cipta Diindungi Undang-Undang
1. Diarangi mengutip sebagian atau seluruh karya tulis ini tanpa mencantumkan dan menyebutkan sumber:
a. Pengutipan hanya untuk kepentingan pendidikan, penelitian, penulisan karya ilmiah, penyusunan laporan, penulisan kritik atau tinjauan suatu masalah.
b. Pengutipan tidak merugikan kepentingan yang wajar UIN Suska Riau.
2. Diarangi mengumumkan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.



SURAT PERNYATAAN PUBLIKASI JURNAL

Saya yang bertanda tangan dibawah ini:

Nama : Bobby Andika Putra
 NIM : 11950314582
 Jurusan : Sistem Informasi
 Judul Tugas Akhir : Sentiment Analysis of Presidential Candidates of the Republic of Indonesia Using Naïve Bayes Classifier and Support Vector Machine

Dengan ini menyatakan bahwa akan melengkapi seluruh kelengkapan administrasi Tugas Akhir Program Studi Sistem Informasi Fakultas Sains dan Teknologi Universitas Islam Negeri Sultan Syarif Kasim Riau **berupa bukti pelaksanaan conference secara lengkap**. Demikian surat pernyataan ini dibuat untuk dipergunakan sebagaimana mestinya.

Pekanbaru, 14 Januari 2024

Yang membuat pernyataan



Bobby Andika Putra
 NIM. 11950314582

UIN SUSKA RIAU

- Hak Cipta Dilindungi Undang-Undang
1. Dilarang mengutip sebagian atau seluruh karya tulis ini tanpa mencantumkan dan menyebutkan sumber:
 - a. Pengutipan hanya untuk kepentingan pendidikan, penelitian, penulisan karya ilmiah, penyusunan laporan, penulisan kritik atau tinjauan suatu masalah.
 - b. Pengutipan tidak merugikan kepentingan yang wajar UIN Suska Riau.
 2. Dilarang mengumumkan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.