PAPER NAME

putri2019.pdf.pdf

AUTHOR

Wahyuningdiah Trisari Harsanti Putri

WORD COUNT

3692 Words

CHARACTER COUNT

20048 Characters

PAGE COUNT

10 Pages

FILE SIZE

522.2KB

SUBMISSION DATE

Feb 9, 2023 2:21?PM GMT+7

REPORT DATE

Feb 9, 2023 2:21?PM GMT+7

7% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

- 7% Internet database
- 1% Publications database
- Crossref Posted Content database
- 1% Submitted Works database

Excluded from Similarity Report

- Crossref database
- Bibliographic material

PAPER NAME

putri2019.pdf

AUTHOR

Wahyuningdiah Trisari Harsanti Putri

WORD COUNT

3272 Words

CHARACTER COUNT

17529 Characters

PAGE COUNT

6 Pages

FILE SIZE

475.0KB

SUBMISSION DATE

Feb 9, 2023 1:59?PM GMT+7

REPORT DATE

Feb 9, 2023 1:59?PM 1 GMT+7

11% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

- 8% Internet database
- 6% Publications database
- Crossref database
- Crossref Posted Content database
- 0% Submitted Works database

Excluded from Similarity Report

- Bibliographic material
- Manually excluded sources

Content-based Filtering Model for Recommendation of Indonesian Legal Article Study Case of Klinik Hukumonline

Wahyuningdiah T. H. Putri
Muhammad Singgih Prastio
Retno Hendrowati
Yustiana Sari
Faculty of Science and Engineering
Paramadina University
Jakarta, Indonesia
Email: wahyuningdiah.trisari@paramadina.ac.id

Harry T. Y. Achsan
Faculty of Computer Science
Universitas Indonesia
Depok, Indonesia

***Abstract*—Recommender system help users in getting the relevant information. For example, it may advise users on a related topic of article, or suggest complementary items to purchase. Application of recommender system is commonly found in commerce sites. Hukumonline is one of media companies and law services. The website consists of various legal content, such as news, consultation articles (they call it Klinik), data repository, event information, and journal (currently beta version). At present, Hukumonline site conduct a manual recommendation system, annotated by the content team as their daily routines. This paper describes our experiment of Content-based filtering (CBF) model for recommendation of Bahasa Indonesia to users of Hukumonline Klinik article on the site. So the manual and labor intensive process can be reduced. For this purpose, we use supervised learning method. Starting with data collection of 3,700 articles spread in 15 categories, followed by preprocessing, vector space representation, and the learning phase, which we experiment on K-Nearest Neighbor algorithm with cosine similarity as the distance metric. We use number hyperparameter K of 17. We separated ten percent of articles for our test data. For evaluation, we use K-Fold Cross Validation with K of 10. Our model generate accuracy rate of 0.75, precision rate of 0.76, recall value of 0.77, and F-Measure of 0.75.**

***Index Terms*—Recommender Systems, Content-based Filtering, Classification, K-Nearest Neighbor.**

I. Introduction

Recommender system help users in getting the relevant information. As a part of e-commerce ecosystem, they represent a powerful method, assisting a user to filter through vast amounts of information and product spaces [1]. There are several basic model of recommender system [2], the collaborative filtering models, content-based, knowledge-based, demographic, hybrid and ensemble-based. The authors are interested in experimenting a model that fits for Bahasa Indonesia. As an underrepresented language [3], with a large number of users around 143.26 million people [4], there should be more focus on Bahasa Indonesia.

Hukumonline is one of Indonesian private companies with core business of media and legal services [5]. It provides legal articles for free. Promoting legal awareness for Indonesian citizens. Moreover, the website provides not only news article on law and legal matter in general, but also online consultation. They also provide repository of court judgment documents, dating back to the 1960s, information of events related to the law, and law journal (currently beta version). Each content within the site is related to one another, in order to serve their user, the website team conduct a manual recommendation process daily to adjust each new articles and other relevant information for users. For this research, we will be focusing on the legal article dataset. We will not discuss the user profile and behavior.

We built a model for Hukumonline to assist their team in reducing tedious task of manually recommending similar articles on their website for visitor. We employed the content-based filtering (CBF) method. This is done by recommending item to the user based on the item description or user interest profile [6]. The CBF method have some advantages that it does not dependent on other users. It is useful in making recommendations for new items, when sufficient rating data are not available for that item. This is due to the fact that items with similar attributes might have already been rated [2]. To discover the article within the same category for recommendation to user, we use classification approach. We train the model to classify each article within each category, and rank them by their similarity to the new data. For this purpose, we use K-Nearest Neighbor (KNN) algorithm [7]. KNN is one of the method for classification of text article [8]. KNN works by finding the K closest examples in the feature space, and then classify the new input to that group [9].

The novelty of this research is we built the model for a recommender system for the legal article domain. Something that has not been done before. Other domain such as education [10] [11], news [12] [13], and commerce [14] [15] have been the subject of previous research in recommender system.

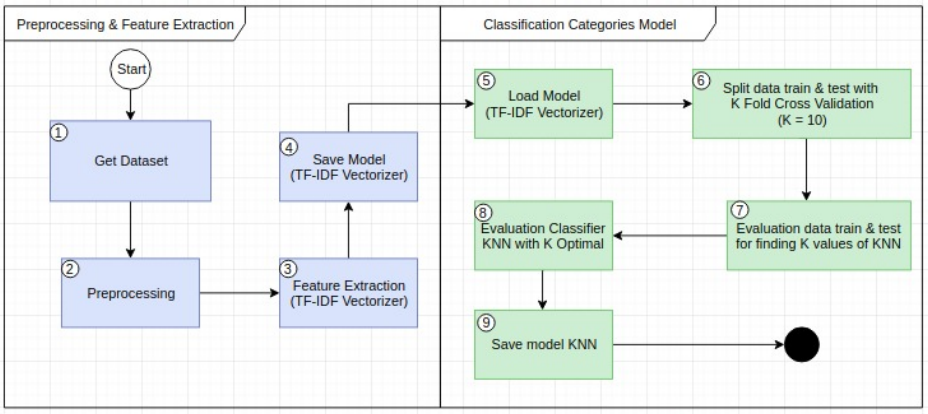

Fig. 1. Proposed Method

II. Previous Study

Natural Language Processing (NLP) is a branch of artificial intelligence with the goal of enabling computer to understand statement or written words that are natural to human [16]. We use this approach along with CBF in building a model for our recommender system. Previous studies of another different approach to building a recommender system is shown in Marlinda, et. al [17] that built a recommender system for choosing a multiple-study program. They employ CBF and Analytical Hierarchy Process (AHP) methods. Their aim was to help students choose the appropriate study program, based on fourteen criteria, and thirty eight alternatives that were structured as a decision tree. They concluded that the recommender system succeeded in providing information and support for deciding the best field of study.

Another approach from Desyaputri et. al [18], combining the collaborative filtering approach and content-based filtering for recommendation of news article in Bahasa Indonesia. The authors concluded that they have succeeded in producing news recommendation that is reliable. Sirajuddin [9], who implemented the KNN for multiple news site acquired 14 percent error rates. Another approach that uses KNN algorithm can be seen in Prasetya [7], the author uses Stanford Network Analysis Platform (SNAP) dataset of e-commerce site. KNN algorithm is used with content-based method to find similarity between products as a foundation for recommendation. The author concluded that CBF method with KNN is far more effective than Collaborative Filtering and Hybrid, for item with large number of features. Wahyuni et. al [19] uses cosine similarity with TF-IDF to classify senior thesis documents, with accuracy of 98 percent.

III. Methodology

Our proposed method to build the model is by analyzing the content of the article. We find the similarity between items by using the term frequency inverse document frequency (TF-IDF). TF-IDF as a part of Natural Language Processing (NLP), is used in information retrieval for feature extraction purposes. In this approach, we are counting the occurrence of each words in a document and weight the importance of each words, and calculate a score for that document and store them as vectors. We then compare the similarity of the item vectors, using the cosine similarity method.

The detailed steps can be seen in Figure 1. We divide our method into two main activities with total of nine steps, initiated by preprocessing and feature extraction followed by creating the model. We start the process by getting the dataset by importing the existing article database from the website into the local machine. We then clean the data from any web tag, by using regular expression (regex), we proceed with casefolding, tokenization, filtering and stemming. We then proceed to feature extraction by using tf-idf. The next step is to save our model using the pickle format. At the second part of our experiment, we load the model, and then evaluate the train and test data to get the optimum value of K. With optimal value of K we train the models and saved it.

IV. Result

A. Dataset used for experiment

The dataset is 3700 article from Hukumonline, and is grouped within 15 categories. The article category ranging from criminal law, labor and industrial law, civil law, to human rights law. The data is imported from MongoDB and MySQL, ninety percent of the article is our training data, and the rest will be our test data. Table I will show the dataset spread.

The number of article in each category differs, and proportionally unbalanced. The number of article for criminal law tops the whole dataset. While human rights category only has thirty one articles. The snippet of the dataset can be viewed on this following link: https://drive.google.com/open?id=1BVfj_jFENTYtlSDrEV6SzVcROaGsfosduuTDr1r0LWk

B. Experimental setup

1) Preprocessing: The preprocessing steps conducted to the dataset among others, case folding, tokenization, stopwords removal, stemming, and token join. We use the python library spacy for cleaning text data, such as removing stop words, special characters, and then lemmatization. Next, we use

TABLE I
NUMBER OF ARTICLE BY CATEGORY

Category	Number of articles
Criminal law	935
Labor and industrial law	508
Civil law	314
Family and inheritance law	285
State and Constitutional law	345
Company law	215
Business and investment	224
Land law and property	170
Legal studies	157
Intellectual property rights	170
Law profession	102
Consumer protection	91
Telecommunication and technology	102
Start-up and small-medium company	51
Human rights	31
Total	3700

Indonesian stemmer Sastrawi library to stem the text data that was ignored by spacy. Stemmer Sastrawi worked on stemming the words that are not recognized by spacy. The process took around 1 minute 25 second per 50 data as can be seen in Figure 2.

```
39 5c6546f960f29d0011075ced
40 5c6546f960f29d000e38c8af
41 5c6546f9e9f38b000e4f9a15
42 5c65478360f29d0011075d03
43 5c65483be9f38b000f2ff1f6
44 5c65483ce9f38b00101b6eb5
45 5c65483fe9f38b001164eb04
46 5c65484460f29d000e38c8bf
47 5c6548c660f29d000f070f14
48 5c6548e9e9f38b000f2ff205
49 5c6548e9e9f38b000f2ff206
50 5c654951e9f38b000e4f9a36
CPU times: user 1min 25s, sys: 93.3 ms, total: 1min 25s
Wall time: 1min 26s
```

Fig. 2. Preprocessing Time

2) Vector Space Modelling: Vector Space Modelling is an effort to represent each document in a collection as a point in space. In this representation, points (vector in vector space) that are close together are semantically similar and vice versa [20]. A document in our vector space model is a matrix consist of the weight of all the words in that document. That weight signifies the importance of the words relative to the whole documents. We use the tf-idf approach, using one of the available python libraries tf-idf vectorizer. The tf-idf matrix contained 3700 rows of documents and 20284 columns as features. Figure 3 shows our VSM.

```
Total  :  3700
Matrix :  (3700, 20284)
CPU times: user 1.24 s, sys: 318 ms, total: 1.55 s
Wall time: 14.8 s
```

Fig. 3. TF-IDF Matrix Shape

3) KNN Classification with Cosine Similarity Distance: After the document is cleaned and vectorized in the previous step, we start the process of classification using the KNN algorithm.To start training our data, we must first acquire the K value by plotting the relationship between the values of K and the corresponding testing accuracy. Larger K value would mean less complex model while smaller K means more complex model. We get the maximum testing accuracy when the model has right level of complexity. In our experiment we try the range of K from 1 to 25. We use the accuracy rate to determine the most suitable K. The time it took to finish finding the optimal K, for the said range was 3 hours, 21 minutes and 17 seconds. Fig 4 shows the highest point, when the accuracy is at 0.756486 at K value of 17. We save 10 different models, because we use the 10-Fold Cross Validation.

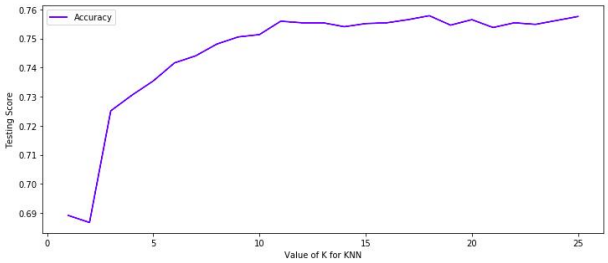

Fig. 4. Optimal Value for K

The common approach to getting the similarity of a document is by using the cosine distance. It measures the cosine of the angle between two vectors. In this research context, the two vectors are the vectorized text. Figure 5 shows us the similarity score between the test data with article title ”Pelaksanaan Hak Angket oleh DPR” with other article within the same category. The first article with title ”Aturan Upaya Pemanggilan Paksa oleh DPR” ranked the highest. Both articles share the terms ”DPR” and share the nuance of ”rights” that belongs to the parliament (DPR).

```
Judul    :  Pelaksanaan Hak Angket oleh DPR
Category :  Kenegaraan
```

	category	guid	score	title
0	Kenegaraan	lt5ca248018d6b4	0.685378	Aturan Upaya Pemanggilan Paksa oleh DPR
1	Kenegaraan	lt5b7e6f7da3e80	0.567069	Haruskah Izin MKD untuk Menyidik Anggota DPR yang Terlibat Tindak Pidana?
2	Kenegaraan	lt5c4fc23695ddc	0.552407	Dapatkah Menguji Kembali Materi Muatan Pasal yang Sama ke MK?
3	Kenegaraan	lt5c99e6f4c009f	0.538578	Aturan Seputar Hukum Acara Mahkamah Konstitusi
4	Kenegaraan	lt5c9c564a4a836	0.535397	Jika UU Dicabut oleh MK, Apakah UU Terdahulu Otomatis Berlaku?

Fig. 5. Recommended Articles by Similarity

The Figure 5 shows the score for article similarity according to one of our model. For the category of State and Constitutional Law, the article ranked first, has similarity score of 0.685378. Followed by the rest of the article that our model ranked as having similarity to the test data. We have yet to implement the model for the recommender system. But the models works well for the dataset.

C. Performance Evaluation Measures

Offline methods are the preferred techniques for testing recommendation algorithms [2], in this experiment, we use

the available historical dataset and employ the K-Fold Cross Validation with K = 10. First, we shuffle the dataset randomly and then split the dataset into 10 groups. For each unique group we take 10 percent to be the test dataset, then fit the remaining training set with our model. We retain the evaluation score, and finally summarize the skill of the model using the sample of model evaluation scores. The proportion of train and test data is shown in Figure 6 below. The test data consist of 10% or 370 articles.

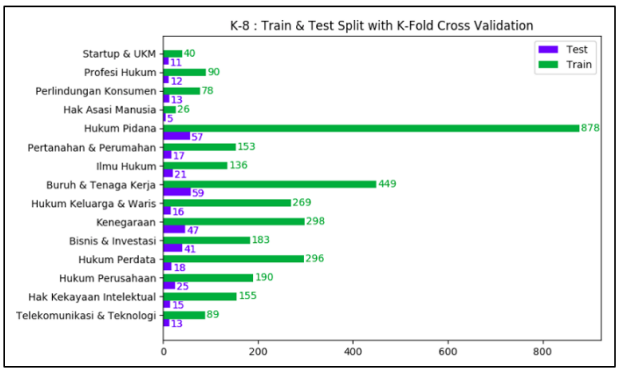

Fig. 6. Train Test Split Data

As we mentioned above, the dataset spread for each article is propotionally unbalanced. Figure 6 shows that for certain category like human rights and startup & UKM have less than one hundred data. This small amount of data may amount to the anomaly that we see in the confusion matrix.

TABLE II
10 FOLD CROSS VALIDATION FOR CBF MODEL

	Accuracy	Precision	Recall	F1 Score
1	0.797297	0.819728	0.80163	0.779533
2	0.786486	0.790713	0.786486	0.770782
3	0.805405	0.796567	0.805405	0.789209
4	0.781081	0.804533	0.785326	0.778176
5	0.797297	0.796732	0.81044	0.797217
6	0.697297	0.68286	0.697297	0.678013
7	0.654054	0.699358	0.724551	0.685203
8	0.656757	0.689111	0.72973	0.69203
9	0.759459	0.747716	0.765668	0.742616
10	0.781081	0.774415	0.785326	0.77013

Table II above shows the accuracy, precision, recall, and F1 score for our 10-fold cross validation result. The average score for accuracy = 0.7516214, precision = 0.7601733, recall = 0.7691859, and F1 score = 0.7482909.

Our confusion matrix in Figure 7 shows that the model predict several zeroes across categories. We suspect that this is due to unbalanced dataset spread. Human rights category has only twenty six train data, legal studies 136 train data, and Startup & UKM 40 train data. The model is just not able to predict any unseen sample from samples it has seen during training. But we must reflect the real value from all 10 fold cross validation result. Point to further discussion, we think to prevent such anomaly from happening again, the training data must be proportional across the categories.

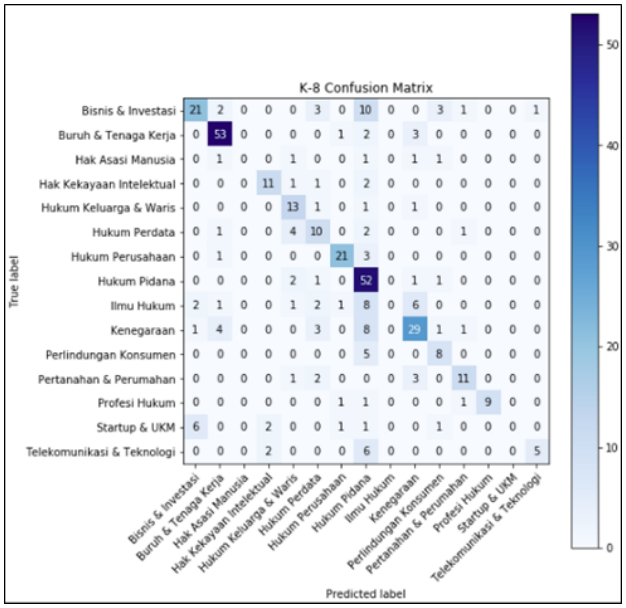

Fig. 7. Confusion Matrix at K=8

We compare our result with other classification method such as Naive Bayes and Support Vector Machine (SVM). Naive Bayes scored 0.5243 for accuracy, 0.5697 for precision, and 0.5243 for recall. The other classifier that we compare into, SVM scored 0.2351 for accuraccy, 0.0552 for precision, and 0.2351 for recall. The time took in second to train our dataset was 0.41 for Naive Bayes, 51 for KNN, and 809 for SVM. Figure 8 below shows the comparison between three classifier with our dataset.

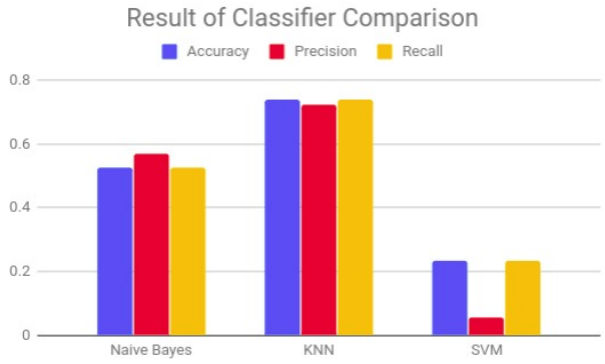

Fig. 8. Comparison of Classifiers

Our model performs better in accuracy, precision, and recall than the former methods. Naive Bayes performs better than our model for classification time.

V. CONCLUSIONS

In this paper, we propose a model for recommender system, using content-based filtering approach for Indonesian Language. We have found the optimum value of K for the

K-Nearest Neighbor algorithm, implement them and validate our model using the K-Fold Cross Validation technique. We achieve a good score for accuracy, precision, recall, and F1. We did not apply any dimensionality reduction, which might have increased our scores. Recommendation for future research is to use larger dataset, have a proportional dataset across categories, employ dimensionality reduction, and perhaps trying various other classification method such as Decision Trees, Support Vector Machine, or Artificial Neural Networks.

ACKNOWLEDGMENT

The authors would like to thank Hukumonline, PT. Justika Siar Publika for providing the data and computational power needed to conduct this experiment. Part of this research is funded by Direktorat Riset dan Pengabdian Masyarakat, Direktorat Jendral Penguatan Riset dan Pengembangan Kementrian Riset, Teknologi, dan Pendidikan Tinggi Republik Indonesia.

REFERENCES

[1] M. D. Esktrand, J. T. Riedl, and J. A. Konstan, "Collaborative Filtering Recommender Systems," *Foundation and Trends in Human-Computer Interaction*, vol. 4, no. 2, pp. 81–173, 2010.

[2] C. C. Aggarwal, "An introduction to recommender systems," *Recommender Systems The Textbook*, pp. 1–28, 2016.

[3] S. D. Larasati and R. Manurung, "Towards a semantic analysis of bahasa Indonesia for question answering," *Proceedings of the 10th Conference of the Pacific Association for Computational Linguistics*, pp. 273–280, 2007. [Online]. Available: http://staf.cs.ui.ac.id/{~}maruli/pub/pacling07.pdf

[4] R. J. Sunarsono, S. Hartini, and T. Soedarto, "The E-Servicescape of Mobile-Based Online Shopping Application Assessment: An Indonesian M-Commerce Fact," vol. 1, no. Icst, pp. 638–644, 2018.

[5] Hukumonline. (2000) Tentang kami. (pt justika siar publika) retrieved april 3, 2019, from. [Online]. Available: https://www.hukumonline.com/tentangkami

[6] P. Lops, M. d. Gemmis, and G. Semeraro, "Content-based recommender systems: State of the art and trends," *In Recommender Systems Handbook (p*, pp. 73–105, 2010.

[7] C. S. Prasetya, "Sistem rekomendasi pada e-commerce menggunakan k-nearest neighbor," *Jurnal Teknologi Informasi dan Ilmu Komputer*, pp. 194–200, 2017.

[8] X. Amatriain, A. Jaimes, N. Oliver, and J. M. Pujol, "Data mining methods for recommender systems," *In Recommender Systems Handbook (p*, pp. 39–71, 2010.

[9] A. Sirajuddin. Sistem Rekomendasi Artikel Berita Menggunakan Metode K-Nearest Neighbor Berbasis Website, 2017.

[10] A. S. Wardana and M. I. Ananta Timur, "Collaborative Filtering Recommender System pada Virtual 3D Kelas Cendekia," *IJEIS (Indonesian Journal of Electronics and Instrumentation Systems)*, vol. 8, no. 1, p. 73, 2018.

[11] D. P. Kusumaningrum, N. A. Setiyanto, E. Y. Hidayat, and K. Hastuti, "Recommendation System for Major University Determination Based on Student's Profile and Interest," *Journal of Applied Intelligent System*, vol. 2, no. 1, pp. 21–28, 2017.

[12] N. V. Wahono, A. Wibowo, and R. Intan, "Aplikasi Indonesian News Aggregator Berbasis Android yang Didukung oleh Sistem Perekomendasi."

[13] A. Wibowo, R. Intan, and N. Valentina, "Indonesian News Harvester and Recommender System," *ComTech: Computer, Mathematics and Engineering Applications*, vol. 8, no. 3, p. 171, 2017.

[14] F. Masruri and W. F. Mahmudy, "Personalisasi Web E-Commerce Menggunakan Recommender System dengan Metode Item-Based Collaborative Filtering," *Personalisasi Web E-Commerce Menggunakan Recommender System dengan Metode Item-Based Collaborative Filtering*, vol. 3, no. 1, pp. 1–12, 2007.

[15] T. Budianto and L. K. Wardhani, "Rancang Bangun Movie Recommender System Dengan Metode Cluster-Based Smoothing Collaborative Filtering," *Seminar Nasional Teknologi Informasi Komunikasi dan Industri*, pp. 245–251, 2012.

[16] S. Singh, K. Khatter, A. Koli, and D. Khurana, *Natural Language Processing: State of The Art*. Current Trends and Challenges, 2017.

[17] L. Marlinda, P. E. Kreshana, and D. I. Sensuse, "A Multi-Study Program Recommender System Using Content-Based Filtering and Analytical Hierarchy Process (AHP) Methods," *International Journal of Computer Science Issues*, vol. 9, no. 3, pp. 191–196, 2012.

[18] D. M. Desyaputri, A. Erwin, M. Galinium, and D. Nugrahadi, "News recommendation in Indonesian language based on user click behavior," *Proceedings - 2013 International Conference on Information Technology and Electrical Engineering: "Intelligent and Green Technologies for Sustainable Development", ICITEE 2013*, pp. 164–169, 2013.

[19] R. T. Wahyuni, D. Prastiyanto, and E. Supraptono, "Penerapan algoritma cosine similarity dan pembobotan tf-idf pada sistem klasifikasi dokumen skripsi," *Jurnal Teknik Elektro Universitas Negeri Semarang*, vol. 9, p. 1, 2017.

[20] P. D. Turney and P. Pantel, "From Frequency to Meaning: Vector Space Models of Semantics Peter," *Journal of Artifcial Intelligence Research*, vol. 37, pp. 141–188, 2010. [Online]. Available: http://portal.acm.org/citation.cfm?doid=336512.336523

 978-1-7281-5347-6/19/$31.00

11% Overall Similarity

Top sources found in the following databases:

- 8% Internet database
- Crossref database
- 0% Submitted Works database
- 6% Publications database
- Crossref Posted Content database

TOP SOURCES

The sources with the highest number of matches within the submission. Overlapping sources will not be displayed.

1	towardsdatascience.com Internet	2%
2	researchr.org Internet	<1%
3	Aggarwal, Charu C.. "An Introduction to Recommender Systems", Reco... Crossref	<1%
4	Daniel Hladek, Jan Stas, Matus Pleva, Stanislav Ondas, Laszlo Kovacs. ... Crossref	<1%
5	europeanproceedings.com Internet	<1%
6	e-journal.unair.ac.id Internet	<1%
7	docplayer.net Internet	<1%
8	ebin.pub Internet	<1%

9	coursehero.com Internet	<1%
10	Linda Marlinda, Taufik Baidawi, Yusuf Durachman, Akmaludin. "A multi... Crossref	<1%
11	go.gale.com Internet	<1%
12	repository.tudelft.nl Internet	<1%
13	Widodo, Eko K. Budiardjo, Wahyu C. Wibowo, Harry T.Y. Achsan. "An A... Crossref	<1%
14	frontiersin.org Internet	<1%
15	ijeecs.iaescore.com Internet	<1%
16	123dok.com Internet	<1%
17	repository.nusamandiri.ac.id Internet	<1%

Excluded from Similarity Report

- Bibliographic material
- Manually excluded sources

EXCLUDED SOURCES

Wahyuningdiah T. H. Putri, Muhammad Singgih Prastio, Retno Hendrowati, Yu... Crossref	93%
Recommender Systems, 2016. Crossref	2%
Charu C. Aggarwal. "Recommender Systems", Springer Science and Business ... Crossref	2%
Harry Tursulistyono Yani Achsan, Deni Kurniawan, Diki Gita Purnama, Quintin ... Crossref	1%
Rifki Indra Perwira, Bambang Yuwono, Risya Ines Putri Siswoyo, Febri Liantoni... Crossref	<1%
Alan Menk Dos Santos. "Personality-based recommendation: human curiosity... Crossref posted content	<1%
Harry Tursulistyono Yani Achsan, Wahyu Catur Wibowo, Wahyuningdiah Trisa... Crossref	<1%
Khodijah Hulliyah, Achmad Maulana Almaisah, Fitri Mintarsih, Siti Ummi Masr... Crossref	<1%
Putri Yuni Ristanti, Aji Prasetya Wibawa, Utomo Pujianto. "Cosine Similarity fo... Crossref	<1%
Danielle Lee, Peter Brusilovsky. "Recommending Talks at Research Conferenc... Crossref	<1%

7% Overall Similarity

Top sources found in the following databases:

- 7% Internet database
- Crossref Posted Content database
- 1% Publications database
- 1% Submitted Works database

TOP SOURCES

The sources with the highest number of matches within the submission. Overlapping sources will not be displayed.

1	**paramadina on 2022-07-04** Submitted works	1%
2	**researchr.org** Internet	<1%
3	**Alan Menk Dos Santos. "Personality-based recommendation: human c...** Crossref posted content	<1%
4	**atlantis-press.com** Internet	<1%
5	**e-journal.unair.ac.id** Internet	<1%
6	**coursehero.com** Internet	<1%
7	**go.gale.com** Internet	<1%
8	**frontiersin.org** Internet	<1%
9	**academic.oup.com** Internet	<1%

10	cgi.hasselbom.com.php54.levonline.com Internet	<1%
11	docplayer.com.br Internet	<1%
12	123dok.com Internet	<1%
13	open.uct.ac.za Internet	<1%
14	repository.nusamandiri.ac.id Internet	<1%
15	eprints.unm.ac.id Internet	<1%