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Innovation in Design and Development of Corruption Detection Tool Applications (AKSI)

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A B S T R A C T

The AKSI (Alat Pendeteksi Tindak Pidana Korupsi) application is the latest prototype innovation tool in community service activities for the independent campus program, with the topic of artificial intelligence (AI). This innovation is said to be important in service, because it is a form of service to the community for a community organization for the supervisory function. The community has the right to oversee the running of community institutions or company organizations, based on the scope of rights and placements when working. In addition, this tool also emphasizes proof of presumptions against certain parties, who are said to have committed acts of corruption. In the implementation of this independent campus program, using the method of observation and descriptive approach. The observation method is very suitable for applications that are limited to prototypes. While the descriptive analysis method is a method or way of working in a problem solving by describing, describing and explaining and analyzing the condition of a problem object from the author's point of view based on the results of a literature review that supports the study of literature. However, the implementation of this service is still said to be a design, and is still in the orientation stage based on the systematic use of artificial intelligence when applied to social case studies in the community.

Keywords: AI, Corruption, Independent Campus, Prototype, Service

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I. INTRODUCTION

Information technology in the globalization era has resulted in rapid and instant changes in the culture of society. All of these things refer to the concept of community needs in every line of activity patterns efficiently. This rhythm of action directly results in positive actions, namely in terms of speed of transportation, communication, and lifestyle. However, an excessive sense of need, especially in terms of organizational culture, also creates a negative side, namely acts of corruption. In the era of postmodernism, the crime of corruption is more defined as manipulative behavior related to the abuse of power [1]. Historically, the system of acts of Corruption, Collusion and Nepotism (KKN) in Indonesia is a well-known fact everywhere. Now, after the fall of the authoritarian New Order regime, it is clear that the practice of KKN has been proven to have become a tradition and culture whose existence is widespread, deeply entrenched and pervasive in the activities of social society and the Indonesian bureaucratic system, from the center to the lowest levels of power [2]

According to the Corruption Eradication Commission (KPK), corruption is divided into several types, namely types of corruption that are detrimental to the state, bribery, abuse of office, extortion, fraud, conflict of interest, procurement corruption, and gratuities [3]. However, people's understanding of AI technology and how to define AI application literacy is still underexplored. This vision presents future challenges for the next generation to learn and interpret the importance of usefulness in dealing with social problems using AI [4]. Therefore, researchers are interested in creating a prototype design for the AKSI (Corruption Crime Detector) application. This design, in its role, puts forward artificial intelligence or artificial intelligence. Artificial intelligence is one of the fields in computer science that is aimed at making software and hardware that functions and is used as something that can think like humans. AI has many benefits in human life. Such as being able to facilitate our work and daily activities [5]. In addition, if this service research discusses case studies of national economic development in the Industrial Revolution 4.0 era, it is closely related to the investment climate, that efforts to strengthen the role of law, which not only functions as a facilitator of ease of doing business, but also as a protector of healthy business competition in facing the global economic climate [6]. This means that the global economic system is strived to improve and be kept clean, from elements of corruption.

II. METHODOLOGY

The AKSI research method describes an observational and descriptive approach. The observation method is very suitable for

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applications that are limited to prototypes. While the descriptive analysis method is a method or way of working in solving a problem by describing, describing and explaining and analyzing the condition of a problem object from the author's point of view based on the results of a literature review that supports the study of literature (Figure 1). Then this method was applied to the audience of the independent campus program participants with the topic of artificial intelligence with a total of 31 participants from different universities.

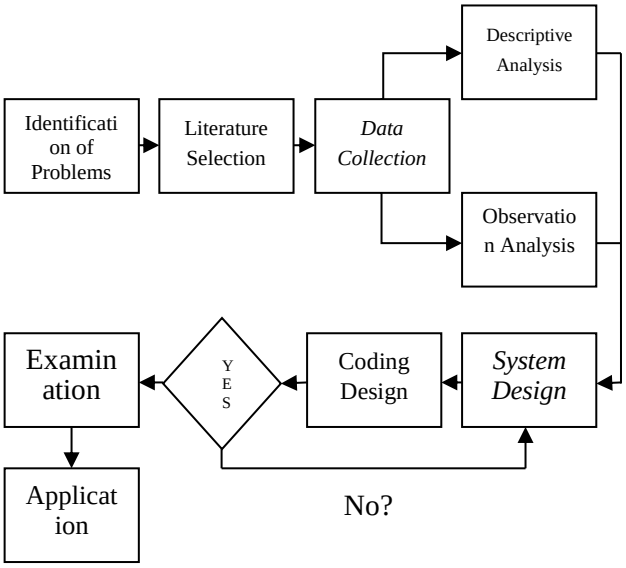

Figure 1 Research Methodology

III. RESULTS AND DISCUSSION

In this activity, the researcher processed the attributes of the dataset of the officials of the organization or in an institution. The results of the dataset grouping can be seen in Table 1 below:

Table 1 AKSI Dataset

No	Object	Type Object
1	Name	Name of Official
2	Phone_Number	Phone Number
3	Gender	Gender
4	Position Period	Age Position
5	Email	Email Address
6	Payment_Method	Method APBD Payments
7	Address 1	Address Home
8	Address 1	Office Address
9	Amount_Moving Assets	Total Movable Property Ownership
10	Amount_Immovable Assets	Total Immovable Property Ownership
11	Files Financial	Reporting with Evidence of Facts
12	MOU Files	Budget Fixation Status
13	Expenses	on Asset Rights Status Expense Dataset Consumption

Source : Data processed by the author (2022)

in Table 1, as AKSI application reference to show similarities and differences between two files. As well as being a reference when there is manipulation of the original document with a fake. Regarding the document similarity system, the researcher detects document similarity by comparing the existing patterns in text documents. One method that can be used is the rabin karp algorithm. Rabin Karp algorithm can detect similarity (similarity) in the document. This algorithm uses hashing to find a substring (a part of a string) in a text by using K-gram [7]. In addition, the researcher applies a document classification system, which is used to detect the validity of the document of agreement/ negotiation/ fairness of the contents of the file.

In people's social life, financial administration matters based on data accuracy is a sensitive matter, when there is a difference between the main and final calculation data. This case also raises suspicion for external parties, with the argument that there is a presumption of corruption. Because based on the data needs of Table 1, a simple prototype flow was made, in order to create a visualization space for writers and readers. It should be noted that this systematic contains elements of simple artificial intelligence, in the independent campus activity program. It is also hoped that this can be followed for joint supervision of institutional and organizational elements in the community.

AKSI Prototype (Corruption Detection Tool)

In the first stage, as in general applications, the researcher introduced the audience to the first page of AKSI. On this slide, you can see the orientation of the application, as well as contact tools when the user has difficulty running the application, they can contact the manager (Figure 2).

Figure 3 Fisrt Page AKSI

Then in the second stage, users will be directed to login or register as a form of compliance with the AKSI application service. The data required are name, email and password. This system is also a guarantee of user privacy, the confidentiality of data that is not published to the public. Information in the form of personal data becomes a reference in the use of internet-based applications. It also concerns one's self-esteem and freedom of expression (Figure 3). The concept of personal data privacy protection is "right to be alone" as a basic principle of one's privacy. Privacy of personal data is a constitutional right of every citizen so that the regulation is a form of respect and protection for that right [8].

Figure 2 Page Two AKSI

After the system user has been registered or has passed the login process, the user will then be presented with a display (home). This third view can be said as a recapitulation of all the tools when passed to the end. Such as analyzing the accuracy of similarities and differences in data from two documents, signature features (digisign), financial calculations, e-stamp rules, and implementation schedules as reminders for users in activities that have been planned in the future. Because the principle to be conveyed to users, namely, functionally applied technology-based convenience, when used at important times or pressed at unexpected times (Figure 4).

Figure 4 Page Three AKSI

Entering the fourth stage of the process, the user will enter the first service feature, namely the similarity of data between two different documents. This display system will function Duplicate document scanner, which is the process of finding duplicate or duplicate files, mostly using standard hash function algorithms. The hash function algorithm acts as a one-way encryption and generates the identity of a document file and each document file produces a unique hash value (Figure 5). A hash function is a function that accepts an input string of arbitrary length and converts it into an output string of a fixed length and generally much smaller than the original string [9]

Figure 5 Page Four AKSI

If the user is not satisfied enough at the fourth stage, then the fifth page uses text mining for the preprocessing stage, as well as the Rabin Karp algorithm for string matching, and a synonym checking method is carried out which is sometimes used to trick words into a sentence (Figure 6). It should be noted that the Rabin Karp Algorithm is a very effective multiple pattern search algorithm for finding strings with multiple patterns [10]

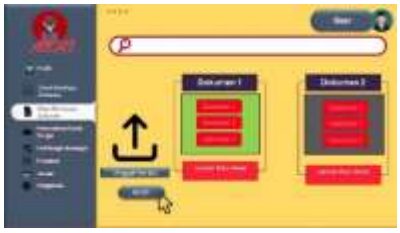

Figure 6 Page Five AKSI

Matching data on the validity of a document can also be seen in terms of the signature or digisign feature. However, this tool only works for digitally signed softfile documents. In addition, this feature can also be used for users to add auto signatures for personal purposes. This service is said to be very important in order to reduce the crime rate of using other people's signatures irresponsibly (Figure 7).

Figure 8 Page Six AKSI

Apart from being a form of matching between two documents with similarities and differences functions, AKSI also presents a simple money processing feature. However, it is still limited, because it has almost the same features as a spreadsheet. This feature is intended to examine the income and expenditure of money, through the calculation of accounting formulas (Figure 8).

Figure 9 Page Seven AKSI

Then, to support the authenticity of the stamp duty, AKSI provides screening to detect the authenticity of the softfile document, with a method similar to the PDF Adobe Acrobat Reader. With the intention of reading the Peruri Seal which is on the electronic stamp (Figure 9).

Figure 10 Page Eight AKSI

And the last stage is the scheduling page, as a reminder for users when they will carry out tasks that will be planned in the future. This page is optional and has no effect on the progress after use.

Figure 7 Page Nine AKSI

The service system through the independent campus program activities is expected to be able to have a positive impact on the perspective of community supervision, so that they take an active role in responding to transparency in their respective institutions or organizations.

Figure 11 Activity Documentation

IV. CONCLUSIONS

As a form of evaluation and the process of drawing conclusions, the researcher conducted a post-test distribution about how far the audience's understanding of the material presented during the service activity was. And the results of the recapitulation are as follows, namely 70% are able to understand the flow of processing the AKSI document data. And the artificial intelligence function in searching for duplicate or duplicate document files in a storage media can be done by providing the identity of each document file using a hash function so that there is no need to open and read the contents of document files one by one, as well as the Rabin Karp algorithm for string matching efficient during activities.

V. SUGGESTIONS

The artificial intelligence learning process must be carefully conceptualized regarding the initial to final steps. This is because students with majors outside the technology group tend to experience delays in the learning process. For this reason, it is necessary to have a curriculum or scope of artificial intelligence containers based on the initial sub-chapters that must be mastered, until the stages of implementation. This is intended to provide learning opportunities for everyone, to be able to learn and implement artificial intelligence in a functional and positive manner.

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VII. REFERENCE

[1] H. Fernando, Y. G. Larasati, and S. A. Latif, “Diseminasi simbolik : Makna korupsi dalam media sosial Instagram,” *Magister Ilmu Komun.*, vol. 8, no. 1, pp. 63–78, 2022.

[2] S. A. Darmawan, “Mendeteksi Persekongkolan dari Pola Penawaran Harga,” *J. Pengadaan Barang/Jasa*, vol. 1, no. 1, pp. 1–9, 2022.

[3] A. M. Padiatra, S. A. Rivaldi, and S. N. Sari, “Bincang Soal Korupsi : Sosialisasi Penguatan Integritas sebagai sarana menumbuhkan budaya Anti Korupsi pada Masyarakat di Cirebon Review Of Corruption Problems : Dissemination of Strengthening Integrity as a means of fostering Anti-Corruption Culture in P,” *Pengabdi. Kpd. Masy.*, vol. 6, no. 1, pp. 106–113, 2021.

[4] Leyli Desra Asrol, Rifma, and Syahril, “Evaluasi Literasi Kecerdasan Buatan Definisi,” *Cybern. J. Educ. Res. Sos. Stud.*, vol. 2, no. April, pp. 1–10, 2021.

[5] A. A. Pratama *et al.*, “Workshop Pengenalan Ajeng (Aplikasi Jangan Menyontek G-Score) Guna Menunjang Pembelajaran,” vol. 3, no. 2, pp. 331–336, 2019.

[6] H. S. Mutia Evi Kristhy, “Peran Hukum dalam Pembangunan Ekonomi,” *J. Sos. Ekon. Pembang.*, vol. 10, no. 5, pp. 166–180, 2012.

[7] I. Widiastuti, C. Rahmad, and Y. Ariyanto, “Aplikasi Pendeteksi Kemiripanpada Dokumen Menggunakan Algoritma Rabin Karp,” *J. Inform. Polinema*, vol. 1, no. 2, p. 13, 2017.

[8] F. Priscyllia, “Perlindungan Privasi Data Pribadi dalam Perspektif Perbandingan Hukum,” *Jatiswara*, vol. 34, no. 3, pp. 1–5, 2019.

[9] N. I. Utami, B. Nadeak, and I. Saputra, “Perancangan Aplikasi Duplicate Document Scanner Menerapkan Algoritma SHA 1,” *J. Ris. Komputer)*, vol. 8, no. 5, pp. 2407–389, 2021.

[10] Z. A. Muhamad Fuat Asnawi 1, “Sistem Informasi Plagiarisme Proposal Tugas Akhir Menggunakan Algoritma Rabin-Karp (Studi Kasus Fastikom Unsiq),” *J. AHLI MUDA Indones.*, vol. 2, no. 2, pp. 39–55, 1959.