



**TRANSFORMASI PELAYANAN PUBLIK: INTEGRASI
CHATBOT AI PADA PROSES PENGEMBANGAN APLIKASI
MOBILE SI-PEKA**

TUGAS AKHIR

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

Oleh:

M. HAIKEL OKSAMA
12050313240



**FAKULTAS SAINS DAN TEKNOLOGI
UNIVERSITAS ISLAM NEGERI SULTAN SYARIF KASIM RIAU
PEKANBARU**

2024

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 mengumpulkan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.

LEMBAR PERSETUJUAN

**TRANSFORMASI PELAYANAN PUBLIK: INTEGRASI
CHATBOT AI PADA PROSES PENGEMBANGAN APLIKASI
MOBILE SI-PEKA**

TUGAS AKHIR

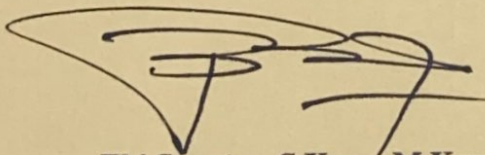
Oleh:

M. HAIKEL OKSAMA

12050313240

Telah diperiksa dan disetujui sebagai Laporan Tugas Akhir
di Pekanbaru, pada tanggal 11 Juli 2024

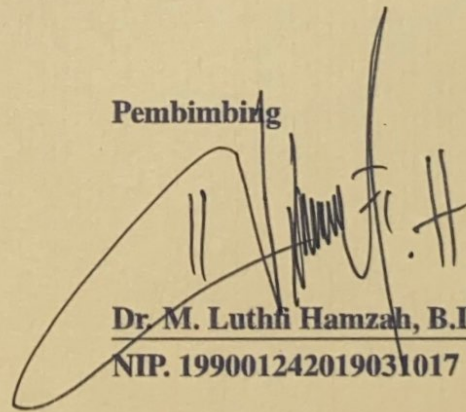
Ketua Program Studi



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

NIP. 198307162011011008

Pembimbing



Dr. M. Luthfi Hamzah, B.IT., M.Kom.

NIP. 199001242019031017

LEMBAR PENGESAHAN

TRANSFORMASI PELAYANAN PUBLIK: INTEGRASI CHATBOT AI PADA PROSES PENGEMBANGAN APLIKASI MOBILE SI-PEKA

TUGAS AKHIR

Oleh:

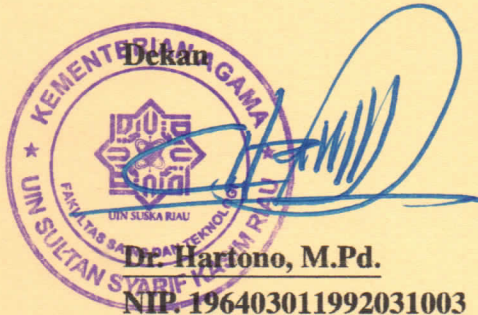
M. HAIKEL OKSAMA

12050313240


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 25 Juni 2024

Pekanbaru, 25 Juni 2024

Mengesahkan,


Dr. Hartono, M.Pd.
NIP. 196403011992031003

Ketua Program Studi


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

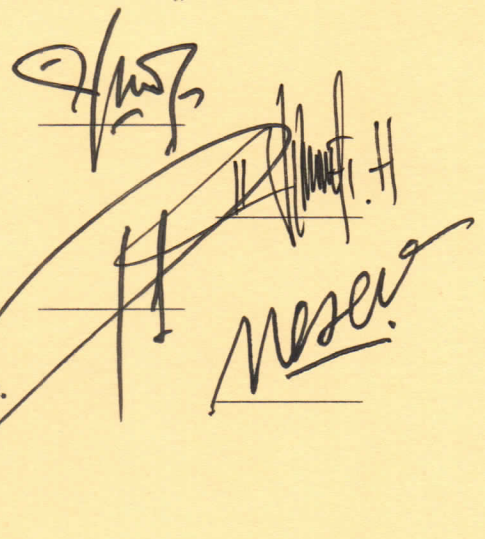
DEWAN PENGUJI:

Ketua : Arif Marsal, Lc., MA.

Sekretaris : Dr. M. Luthfi Hamzah, B.IT., M.Kom.

Anggota 1 : Syaifullah, SE., M.Sc.

Anggota 2 : Nesdi Evrilyan Rozanda, S.Kom., M.Sc.



Lampiran Surat:

Nomor : Nomor 25/2021

Tanggal : 10 September 2024

SURAT PERNYATAAN

Saya yang bertanda tangan dibawah ini:

Nama : M. Haikel Oksama

NIM : 12050313240

Tempat/Tgl. Lahir : Pekanbaru / 11 Oktober 2001

Fakultas/Pascasarjana : Fakultas Sains dan Teknologi

Prodi : Sistem Informasi

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

Transformasi Pelayanan Publik: Integrasi Chatbot AI Pada Proses Pengembangan Aplikasi Mobile SI-PEKA.

Menyatakan dengan sebenar-benarnya bahwa:

1. Penulisan Disertasi/Thesis/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/Thesis/Skripsi/Karya Ilmiah lainnya saya ini, saya nyatakan bebas dari plagiat.
4. Apa bila dikemudian hari terbukti terdapat plagiat dalam penulisan Disertasi/Thesis/Skripsi/(Karya Ilmiah lainnya)* saya tersebut, maka saya bersedia menerima sanksi sesuai peraturan perundang-undangan.

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

Pekanbaru, 15 Juli 2024

Yang membuat pernyataan



M. Haikel Oksama

NIM. 12050313240

**pilih salah satu sesuai jenis karya tulis*



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 peneliti. 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 Ditilik UIN Suska Riau

State Islamic University of Sultan Syarif Kasim

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 mengumpulkan 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 diacu dalam naskah ini dan disebutkan di dalam daftar pustaka.

Pekanbaru, 25 Juni 2024
Yang membuat pernyataan,

M. HAIKEL OKSAMA
NIM. 12050313240

© Hak Cipta milik UIN Suska Riau

State Islamic University of Sultan Syarif K

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

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Dengan menyebut nama Allah yang maha pengasih lagi maha penyayang

Assalamu'alaikum Warahmatullahi Wabarakatuh.

Alhamdulillah Rabbil 'Alamin, segala puji bagi Allah Subhanahu Wa Ta'ala sebagai bentuk rasa syukur atas segala nikmat yang telah diberikan tanpa ada kekurangan sedikitpun. Shalawat beserta salam tak lupa pula kita ucapkan kepada junjungan dan suri tauladan kita Nabi Muhammad Shallallahu 'Alaihi Wa Salam dengan mengucapkan Allahumma Sholli'ala Sayyidina Muhammad Wa'ala Ali Sayyidina Muhammad. Semoga kita semua selalu senantiasa mendapat syafa'at-Nya di dunia maupun di akhirat, aamiin ya rabbal'alaamiin.

Tidak ada kata-kata yang mampu mengungkapkan betapa besarnya rasa syukur dan terimakasih yang saya miliki untuk kedua orangtua saya. Ibu dan Ayah, kalian adalah sosok yang luar biasa dan tidak bisa saya bayangkan bagaimana hidup saya tanpa kehadiran kalian. Terima kasih atas cinta tanpa syarat, ketabahan, dan kesabaranmu. Terima kasih untuk semua nasihatmu yang berharga, semangat yang tak pernah padam, dan keyakinanmu pada potensiku.

Terima kasih juga saya ucapkan kepada saudara, dan teman-temanku yang selalu memberikan dukungan, semangat, inspirasi, bantuan, kolaborasi, dan cerita bersama kalian membuat perjalanan Tugas Akhir ini lebih berarti dan menyenangkan. Terima kasih juga kepada bapak Dr. Muhammad Luthfi Hamzah, B.IT., M.Kom atas bimbingan, arahan, dan masukan berharga yang diberikan selama proses penulisan Tugas Akhir. Kesabaran dan pemahaman Bapak telah membantu saya mengatasi tantangan dan mengembangkan pengetahuan serta keterampilan dalam menyelesaikan Tugas Akhir ini. Semoga kita semua selalu diberikan kemudahan, rahmat, serta karunia-Nya. Aamiin.

Wassalamu'alaikum Warahmatullahi Wabarakaatuh.



KATA PENGANTAR

Alhamdulillah Rabbil 'Alamin, bersyukur kehadiran Allah *Subhanahu Wa Ta'ala* atas segala rahmat dan karunia-Nya sehingga peneliti dapat menyelesaikan Tugas Akhir ini dengan baik dan tepat waktu. *Shalawat* serta salam kita ucapkan kepada Nabi Muhammad *Shallallahu 'Alaihi Wa Sallam* dengan mengucapkan *Allahumma Sholli'Ala Sayyidina Muhammad Wa'Ala Ali Sayyidina Muhammad*. Tugas Akhir ini dibuat sebagai salah satu syarat untuk mendapatkan gelar Sarjana Komputer di Program Studi Sistem Informasi Universitas Islam Negeri Sultan Syarif Kasim Riau.

Pada penulisan Tugas Akhir ini, terdapat beberapa pihak yang sudah berkontribusi dan mendukung peneliti baik berupa materi, moril, dan motivasi. Peneliti ingin 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 yang telah banyak memberikan arahan, masukan, nasihat, serta motivasi dalam penyelesaian Tugas Akhir ini juga dalam perkuliahan.
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 Dr. M. Luthfi Hamzah, B.IT., M.Kom sebagai dosen Pembimbing Tugas Akhir ini yang telah meluangkan waktu, tenaga dan pikiran dalam membimbing peneliti hingga peneliti dapat menyelesaikan Laporan Tugas Akhir ini.
7. Bapak Arif Marsal, Lc., MA sebagai Pembimbing Akademis dan Ketua Sidang Tugas Akhir peneliti yang telah meluangkan waktu, memberikan motivasi, masukan, serta arahan demi kelancaran Sidang Tugas Akhir ini.
8. Bapak Syaifullah, SE., M.Sc sebagai Penguji I peneliti yang telah banyak memberikan arahan, masukan, nasihat serta motivasi dalam penyelesaian Tugas Akhir ini juga dalam perkuliahan.
9. Bapak Nesdi Evrilyan Rozanda, S.Kom., M.Sc sebagai Penguji II peneliti yang telah banyak memberikan arahan, masukan, nasihat serta motivasi dalam penyelesaian Tugas Akhir ini juga dalam perkuliahan.
10. Seluruh Bapak dan Ibu Dosen Program Studi Sistem Informasi yang telah

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 mengumpukan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.

© Hak Cipta milik UIN Suska Riau

State Islamic University of Sultan Syarif Kasim Riau



banyak memberikan ilmunya kepada peneliti. Semoga ilmu yang diberikan dapat peneliti amalkan dan menjadi amal jariyah.

- © Hak cipta milik UIN Suska Riau
11. Kepada orang tua terbaik dalam hidup peneliti, (Alm) Azwar Ibrahim, SH dan Ibu Delvia Darwis yang selalu memberi dukungan, doa, dan motivasi dalam segala hal. Mereka tanpa lelah selalu membimbing untuk menghadapi segala tantangan dalam hidup.
 12. Kepada Abang saya, Andre Ano Fabela yang telah memberikan perhatian, kasih sayang, semangat, dukungan, serta doa kepada peneliti.
 13. Sahabat-sahabat terbaik peneliti, yaitu Muhammad Raihan Pratama Hadi, Farhan Aditya, Rizky Azli Maulana, Nidhal Fikri Adiwidya, Ilham Nasrul, Hafiz Zikra, Dzaky Anza, Refel Minoc, dan semua yang tidak dapat disebutkan satu persatu.
 14. Semua pihak yang namanya tidak dapat disebutkan satu persatu yang telah banyak membantu dalam pelaksanaan serta penyelesaian Tugas Akhir ini. Semoga segala doa dan dorongan yang telah diberikan selama ini menjadi amal kebajikan dan mendapat balasan setimpal dari Allah *Subhanahu Wa Ta'ala*. Peneliti menyadari bahwa penulisan Tugas Akhir ini masih banyak terdapat kekurangan dan jauh dari kata sempurna. Untuk itu, kritik dan saran atau pertanyaan dapat diajukan melalui *email* 12050313240@students.uin-suska.ac.id. Semoga laporan ini bermanfaat bagi kita semua. Akhir kata peneliti ucapkan terima kasih.

Pekanbaru, 08 Juli 2024
Peneliti,

M. HAIKEL OKSAMA
NIM. 12050313240

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 mengumpulkan 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 mengumpulkan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.



UNIVERSITAS ANDALAS
 FACULTY OF INFORMATION TECHNOLOGY
 INTERNATIONAL SYMPOSIUM ON INFORMATION
 TECHNOLOGY AND DIGITAL INNOVATIONS (ISITDI) 2024
 Limau Manis, Pauh, Padang City, West Sumatra 25175
 Website: <http://isitdi.conference.unand.ac.id/>



LETTER OF ACCEPTANCE

May 20, 2024

Dear Authors,

On behalf of the INTERNATIONAL SYMPOSIUM ON INFORMATION TECHNOLOGY AND DIGITAL INNOVATIONS (ISITDI) 2024's committee, we are pleased to inform you that your paper with registration number "1571029990", entitled:

"Transforming Public Service: AI Chatbot Integration in SI-PEKA Mobile App Development"

Written by "M. Haikel Oksama"

has been reviewed and **ACCEPTED** for an oral presentation at the INTERNATIONAL SYMPOSIUM ON INFORMATION TECHNOLOGY AND DIGITAL INNOVATIONS (ISITDI) 2024.

We congratulate your achievement. The technical issues about the presentation will be informed later. Thank you very much for submitting and we look forward to your participation in the ISITDI 2024.

Kindest regard,

Chairman of ISITDI 2024

Dr. Eng. Ir. Budi Rahmadya, M.Eng



Transforming Public Service: AI Chatbot Integration in SI-PEKA Mobile App Development

Muhammad Haikel Oksama

Department of Information System
Faculty of Science and Technology
Universitas Islam Negeri Sultan Syarif
Kasim

Pekanbaru, Indonesia

2050313240@students.uin-suska.ac.id

Syaifullah

Department of Information System Faculty of Science and
Technology

Universitas Islam Negeri Sultan Syarif Kasim

Pekanbaru, Indonesia

syaifullah@uin-suska.ac.id

Arif Marsal

Department of Information System
Faculty of Science and Technology
Universitas Islam Negeri Sultan Syarif
Kasim

Pekanbaru, Indonesia

arif.marsal@uin-suska.ac.id

Muhammad Luthfi Hamzah

Department of Information System
Faculty of Science and Technology
Universitas Islam Negeri Sultan Syarif
Kasim

Pekanbaru, Indonesia

muhammad.luthfi@uin-suska.ac.id

Nesdi Evrilyan Rozanda

Department of Information System Faculty of Science and
Technology

Universitas Islam Negeri Sultan Syarif Kasim

Pekanbaru, Indonesia

nesdi.rozanda@uin-suska.ac.id

Abstract—The rapid advancement of Artificial Intelligence (AI) and its integration into chatbot applications have opened new opportunities for enhancing government administration and public services. However, developing and maintaining chatbots poses significant challenges due to the necessity of proficiency in machine learning and natural language processing, distinguishing it from conventional software development. To address these challenges, this paper introduces SI-PEKA, an innovative public service mobile application featuring the intelligent chatbot, Tanya Jaksa, integrated with advanced AI technology. By leveraging the GPT-4 assistant, facilitated by the OpenAI Platform API, SI-PEKA overcomes these development hurdles, ensuring precise and accurate responses without requiring extensive expertise in AI from developers. Currently, public service delivery at the Public Prosecutor's Office in Pekanbaru is conducted manually. SI-PEKA revolutionizes this process by offering AI-driven legal consultations, thereby enhancing efficiency and convenience for the public. This paper details the development, implementation, and testing of SI-PEKA, highlighting its transformative potential in public service delivery. The development process includes system analysis and design, application implementation, chatbot integration, testing, and iterative improvement. The application underwent rigorous Blackbox testing, achieving a 100% acceptance rate. Results indicate that SI-PEKA functions effectively, providing accurate responses to user queries and demonstrating its efficacy in addressing user needs. This study underscores SI-PEKA's role in driving innovation and adapting to the rapid advancements in AI technology to meet evolving user requirements.

Keywords—Artificial Intelligence (AI), Chatbot, GPT-4, Mobile Application, OpenAI, Public Service

I. INTRODUCTION

In the continually advancing digital age, artificial intelligence (AI) technology has emerged as a crucial element in the alteration of governmental services globally. The utilization of AI presents novel prospects for administrations to enhance their efficiency, efficacy, and responsiveness in delivering services to the public, and are widely favored as a type of content that fits the pattern of modern life [1]. Governments worldwide are leveraging AI to enhance public services, administrative efficiency, decision-making, and strategic planning [2]. The theoretical frameworks employed in the field of public administration, including concepts like

public value, transaction costs, and social equity, are being utilized for the purpose of examining the pros and cons associated with artificial intelligence algorithms in the realm of public service delivery[3].

Studies have shown that AI can significantly impact the purchase of cutting-edge technology, data capabilities, and innovative capabilities of a nation, thereby modernizing public sector services [4]. Additionally, research indicates that AI can improve the quality of life for citizens, enhance access to public goods and services, and transform traditional public services into intelligent services. Furthermore, AI technologies such as ChatGPT/GPT AI have demonstrated the capability to revolutionize operational activities within various industries, such as customer service, thereby improving customer satisfaction [5]. A chatbot is a typical example of an AI system and one of the most elementary and widespread examples of intelligent Human-Computer Interaction (HCI) [6].

The integration of AI chatbots in public service applications offers immediate customer support, efficient information dissemination, self-assessment tools, and connection to public services, showcasing the vast potential for enhancing user experience and service delivery [7]. Research underscores the significance of chatbots in streamlining public services and improving user interaction, ultimately leading to heightened citizen engagement and service quality[8]. By leveraging AI chatbots in public service application, can be essential for improving citizen engagement and the quality of services provided [9].

Through the utilization of artificial intelligence, chatbots have the capability to replicate human interactions, thereby delivering immediate customer service [10]. They simplify access to information, offer quick responses, and operate 24/7 without time constraint [11]. overall, Integrating AI technologies for example chatbots into mobile applications for public services presents a multitude of advantages for both governmental bodies and the general populace.

Although, developing and maintaining chatbots is increasingly crucial and prevalent due to their significance and widespread use. Moreover, the creation of chatbots necessitates proficiency in distinct domains like machine learning and natural language processing, thereby setting it apart from conventional software development. Furthermore,

Challenges in integrating chatbots include the training of the chatbot's model [12]. Other studies also shown that integrating chatbots with external services, extensibility, scalability, and maintenance are challenges in building and deploying chatbots [13]. Furthermore integrating chatbots with mobile apps requires a set of desirable features to cater to a mixed user base, with features like multilingual support, ease of use, and accessibility [14].

Addressing these challenges, the deployment of the GPT-4 assistant API represents a robust solution. The GPT-4 Assistant API is characterized by numerous essential characteristics and functionalities that distinguish it within the domain of natural language processing. This fourth-generation language model, known as GPT-4 and created by OpenAI, features a model size that surpasses one trillion, enhanced multilingual capabilities, enhanced contextual comprehension, and superior logical reasoning skills in comparison to its precursor, GPT-3 [15]. GPT-4's advanced capabilities in natural language processing and machine learning not only simplify the development of chatbots but also enhance their functionality, making them more adaptable to diverse user requirements and more easily integrable with existing systems. ChatGPT and GPT-4 can solve challenges in developing an AI chatbot by understanding people's interests through their questions submitted to it and predicting further enhancements [16][17][18].

These distinctive capabilities of GPT-4 make it an ideal platform for overcoming the challenges previously outlined in chatbot development. Therefore, in this study, we will leverage the GPT-4 Assistant API as the foundational technology for developing the chatbot feature within the SI-PEKA mobile application. This choice is driven by GPT-4's proven effectiveness in handling complex natural language processing tasks and its adaptability to diverse user interactions, ensuring a robust and user-centric service implementation.

This research aimed to develop SI-PEKA, a mobile-based public service integrated with a Chatbot. The platform will encompass additional features such as E-Ticketing, provision of crucial information services, return of evidence, and the ability to apply for a prisoner visit permit. The development process of SI-PEKA involves several key stages: identification and analysis of issues, design of the application, implementation, as well as deployment. SI-PEKA is envisioned to function as a swift and precise application, serving as an enhancement to existing public service platforms by incorporating a chatbot feature that enhances user experience and service delivery.

II. LITERATURE REVIEW

A. Public Service

Public service is an activity or series of activities fulfilling service needs based on statutory regulations for every citizen and population of goods and services, and/or administrative services provided by public service providers [19]. These services are intangible and do not result in ownership, focusing on satisfying socially beneficial interests and are often funded by state or local budgets [20].

B. Artificial Intelligence

Artificial Intelligence (AI) refers to the capacity of a machine or computer system to imitate and execute functions

typically necessitating human intelligence, including but not limited to logical reasoning, acquisition of knowledge, and resolution of problems as elucidated by the scholars [21]. AI encompasses a synthesis of computer science, logical reasoning, biological studies, psychological insights, philosophical principles, and various other fields. Its advancements have led to notable achievements in various areas, including speech recognition, image analysis, processing of human language, automated theorem proving, and the development of intelligent robotic systems [22]. Starting from past decade, significant technological strides have been made in the realms of AI and data science. While research in AI has been ongoing for many years across various applications, the current surge in AI enthusiasm marks a distinctive shift from previous iterations. The Google search engine and Chat-GPT exemplify how artificial intelligence is extensively integrated into society through everyday applications [23]. This shift is primarily attributed to a synergistic blend of faster computer processing capabilities, expansive data libraries, and a burgeoning pool of AI talent. Consequently, these factors have facilitated the swift advancement of AI tools and technologies [24]. In recent times, there has been extensive research into applying AI and machine learning to mobile devices. This effort seeks to improve computational capabilities and open avenues for new applications like facial recognition for unlocking, speech recognition, translating natural language, and enabling virtual reality experiences [25].

C. Chatbot

A chatbot is a software program developed to replicate human dialogue through comprehension of queries and production of replies, thereby enabling cost-effective and expert customer service [26][27]. These chatbots are capable of automating routine tasks, which allows human employees to focus on more complex and creative activities [28]. They are constructed using a mix of Natural Language Processing (NLP) and Machine Learning (ML), increasingly incorporating more sophisticated models that use Neural Networks [29]. The chatbot is developed to utilize pattern matching, recognizing the structure of sentences and storing corresponding response patterns [30]. Chatbots have undergone substantial development alongside the advancement of artificial intelligence, being utilized across a range of sectors such as public sectors, education, customer service, entertainment, and personal assistance. Implementation of these chatbots often involves sophisticated technologies like neural networks, facilitating autonomous learning processes via machine learning. Moreover, the utilization of chatbots has the potential to improve user interactions by delivering prompt and precise information without temporal limitations. Chatbots have the capability to provide personalized question-and-answer sessions, known as Personalized Q&A, in order to enhance the speed and effectiveness of information delivery [31].

D. Mobile Application

Mobile applications represent a shift from the integrated software systems typically associated with personal computers, offering discrete and restricted functionalities [32]. Mobile applications can be characterized as mobile operating systems functioning on smart devices, providing advanced computing capabilities and diverse functions tailored for use

on mobile devices like tablets or smartphones. These applications enable users to seamlessly access internet services typically utilized on a Personal Computer (PC) with the added convenience of being portable and easily carried wherever one goes [33][34][35].

E. RESTful API

A RESTful API, as outlined in the provided contexts, serves as a crucial mediator between users, clients, resources, and web services, allowing interactions with systems to retrieve information, perform actions, and maintain security protocols [28]. It operates based on a set of guidelines for designing resources accessed over HTTP endpoints, utilizing HTTP verbs to define actions on resources and structuring related resources with hierarchical URIs [36]. RESTful APIs are widely used in modern cloud applications, presenting challenges in testing due to their reliance on network communications and interaction with external services like databases [37]. Within the RESTful API, a REST client is incorporated to access data or resources located on the REST server. Each resource is identified either by a global ID or URIs (Universal Resource Identifiers). This characteristic renders the RESTful API highly compatible for integration with startup websites, particularly those catering to smartphone users, like the Takeaway application. However, despite this growing trend, there remains a lack of standardized practices concerning the development of RESTful web services, particularly in optimizing URI resource utilization [38].

III. METHODOLOGY

This study focuses on the development of an Android-based application, integrating a chatbot into the public service mobile application SI-PEKA. The development process is structured into four phases: (1) User Requirement; (2) Application Design; (3) Implementation and Testing.

A. User Requirement

This phase involves gathering and analyzing the requirements of the application from the perspective of the users. It aims to understand their needs and preferences to ensure that the final product meets their expectations. This phase commences with data collection through interviews and literature review. During the interview process, information is gathered by conducting interviews with the Head of Construction subdivision (Kasubagbin) at the Public Prosecutor's Office in Pekanbaru. The data collected in this process encompasses the current operational flow of public services within the office and frequently asked questions during legal consultations. Once the data has been collected, it is subjected to analysis to identify and understand the needs of the users.

B. Application and System Design

Following the user requirements phase, the analysis results serve as the foundation for system design. Several considerations are taken into account during the design phase: (1) Selection of Mobile Operating System, The Android mobile operating system is chosen as the preferred platform due to its widespread adoption among the target users. This decision ensures compatibility and accessibility for the intended audience. (2) Development Tools, Android Studio is

selected as the primary development environment for building the application. The programming language Kotlin and the Jetpack Compose library are utilized for developing the application. Kotlin offers modern features and seamless integration with Android development, while Jetpack Compose simplifies UI development with its declarative approach. (3) Integration with RESTful API, A RESTful API will be incorporated into the system architecture for consuming and requesting responses from the Chatbot. This API will facilitate communication between the mobile application and the OpenAI Assistant GPT-4 API, which powers the Chatbot functionality. (4) By prioritizing simplicity, the application ensures that users can easily access and interact with the Chatbot functionality, enhancing their overall experience and satisfaction. Figure 1 show Use Case Diagram of SIPEKA Application.

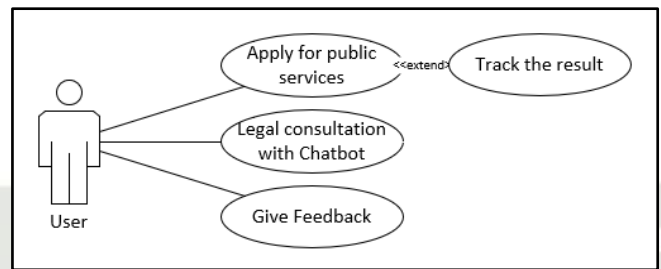


Fig. 1. Use Case Diagram

The design approach emphasizes simplicity and usability, aiming to create an intuitive and easy-to-navigate interface for users. Figure 2 show the wireframe of the application.

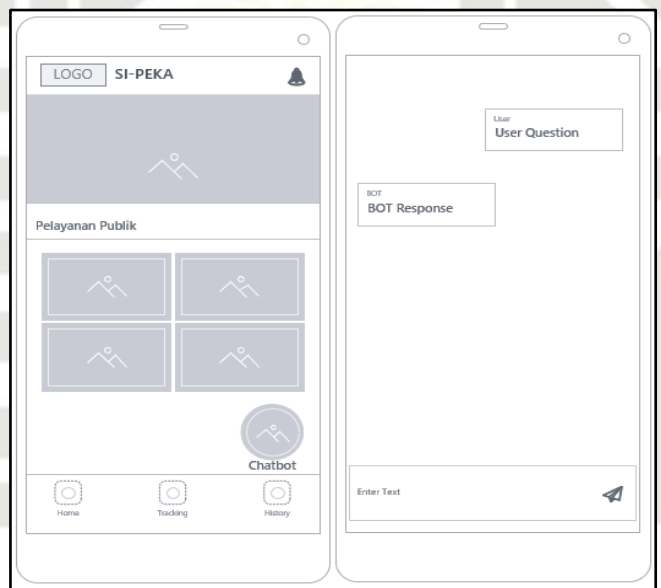


Fig. 2. Wireframes of SIPEKA Application

In addition to the chatbot, the application will feature several functionalities, (1) Public Service: User can apply for public service that available at Public Prosecutor's Office in Pekanbaru, there are E-Ticketing, provision of crucial information services, return of evidence, and the ability to apply for a prisoner visit permit. (2) Tracking: Upon applying for a public service, users will receive a tracking code. In this menu, users can track the status of their applications. (3) History: This section will display a list of all public services that the user has applied for.



The application utilizes a RESTful API to communicate with the OpenAI API service for the chatbot functionality. The structure of the API service is illustrated in Figure 3.

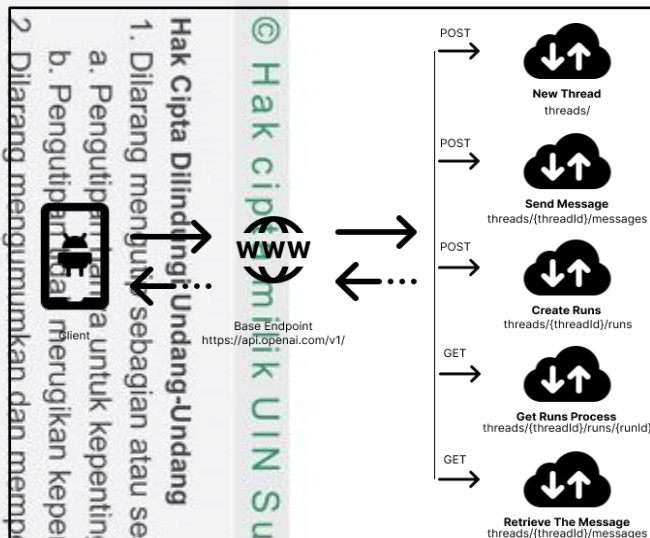


Fig. 3. OpenAI Assistant Api Structure

To utilize the OpenAI Assistant API, it is necessary to employ five distinct endpoints provided, with the base URL being <https://api.openai.com/v1/>. These endpoints serve various functionalities: (1) Thread: A Thread represents an exchange of dialogue between a user and one or multiple Assistants. It is initiated when a user (via an AI application) commences a conversation with an Assistant. (2) Send Message: This process entails dispatching a new message to the established thread. Content generated by users or applications is encapsulated within Message objects and appended to the Thread. These messages can contain both text and files. (3) Create Runs: Once all user messages are integrated into the Thread, it can be executed with any Assistant. Initiating a Run utilizes the model and tools associated with the Assistant to generate a response. These responses are subsequently appended to the Thread as assistant messages. (4) Get Runs: This step involves retrieving the response status from the current thread. The runs object may have multiple statuses, including queued, in progress, completed, failed, cancelled, or expired. (5) Message Retrieval: Upon the completion of the runs status, the assistant response can now be retrieved. The response is displayed as an array of messages, requiring retrieval of the latest one [39][40].

C. Implementation

This section details the execution phase of the development process and delves into the technical aspects of the application. Task execution based on the design and coding principles of the selected programming language is outlined herein. Kotlin, coupled with the Jetpack Compose UI library, serves as the foundation for application development. Additionally, the Retrofit library is leveraged to facilitate seamless communication with the OpenAI API.

The application underwent rigorous testing on both virtual emulators and physical devices to ensure functionality across various platforms. Compatibility testing was conducted to assess performance on different versions of the Android operating system, with a minimum support requirement of

Android 8.0 Oreo. Additionally, specific tests targeted the chatbot's response accuracy and relevance to user queries. This meticulous Blackbox testing approach ensures that the application functions optimally and provides precise, satisfactory responses from the chatbot feature.

IV. RESULT AND DISCUSSION

A. Chatbot Implementation

The implementation process of the chatbot entails a series of sequential steps. Initially, we established a new assistant within the OpenAI platform, assigning the name "Tanya Jaksa" to both the assistant and the chatbot within the application. Subsequently, we imparted instructions to the assistant based on insights gathered during user requirement interviews.

Following this, from the array of models provided by OpenAI, we opted for GPT-4 due to its superior responsiveness and real-time data availability. Additionally, to further enrich the assistant's capabilities, we uploaded several .txt files containing frequently asked questions from legal consultations, thereby enhancing its repository of responses.

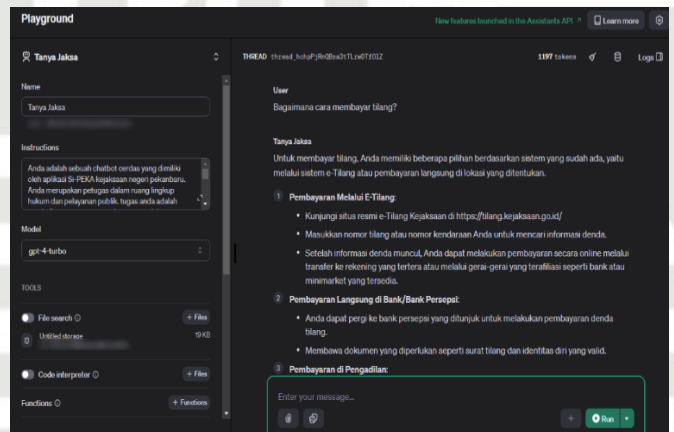


Fig. 4. OpenAI Assistant Creation Process

Prior to integrating the assistant into our application, we conducted thorough testing of its responses within the playground provided by the OpenAI platform. This iterative testing process involved multiple runs, necessitating adjustments and fine-tuning of the instructions to enhance the quality of the responses.

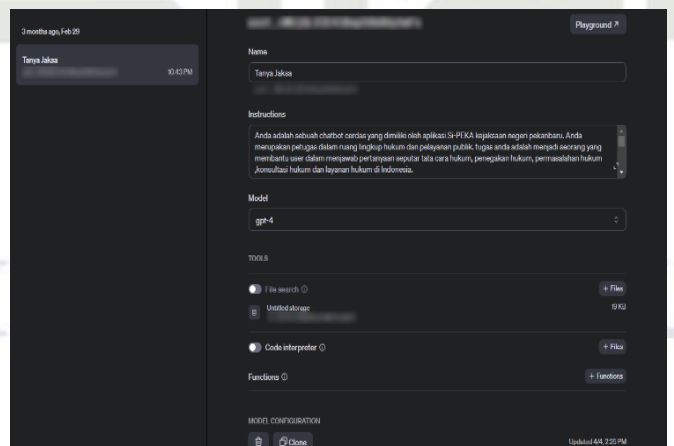


Fig. 5. Chatbot response testing in OpenAI Platform Playground



The next step is to make a call to the Assistant API. This process includes several steps: (1) Establishing an API Service Interface: This interface enables the definition of functions for making requests to the OpenAI base URL. Within this interface, based on figure 3, we have implemented five functions: createThread, sendPrompt, createRuns, getRuns, and getMessageResponse. (2) Creating an Api Config object: This object plays a crucial role in constructing a new Retrofit instance. Initially, we crafted a function within the object to return the API service previously defined. subsequently, we instantiated an HTTP client, selecting OkHttpClient for this application. Additionally, we applied a request header containing the OpenAI API key and integrated a logger to streamlined debugging in the request interceptor. Finally, we instantiated and built a new Retrofit instance, utilizing OkHttpClient as the client. (3) Executing the Request: The final step entailed executing the request through the Retrofit object. We implemented a new function within our Repository class to return a flow of chatbot message data class. Initially, the JSON response was converted into a readable string using the Gson converter. Subsequently, a new chatbot message instance was created from the result and returned as a flow.

```

1. Establish API Service Interface:
  Define ApiServiceInterface
  Function createThread()
  Function sendPrompt()
  Function createRuns()
  Function getRuns()
  Function getMessageResponse()
  End Define
2. Create ApiConfig object:
  Define ApiConfig
  Function getAPIService()
  Return ApiServiceInterface instance
  End Function

  Instantiate OkHttpClient
  Set request header with OpenAI API key
  Integrate logger into request interceptor
  Instantiate Retrofit instance with OkHttpClient
  End Define
3. Execute the Request:
  Define Repository
  Function getChatbotMessageDataFlow()
  Convert JSON response to readable string
  Create chatbot message instance from result
  Return chatbot message data as a flow
  End Function
  End Define
4. Process Execution:
  Establish ApiServiceInterface
  Create ApiConfig object
  Execute getChatbotMessageDataFlow() function
  
```

Fig. 6. OpenAI Assistant API Implementation Pseudocode

B. SIPEKA Implementation

SIPEKA mobile application implementation phase of the application was executed meticulously, building upon the foundation laid out in the earlier phases of the methodology. The process commenced with the wireframe UI design, as shown in Figure 2, serving as a visual blueprint for the application's user interface (UI). Leveraging the Jetpack Compose library expedited the UI development process significantly, owing to its declarative approach, which facilitated efficient and intuitive design implementation.

The design goals we pursued aimed for simplicity and user-friendliness. The UI structure and navigation of the application also shown in figure 7 and figure 8 show its implementation.

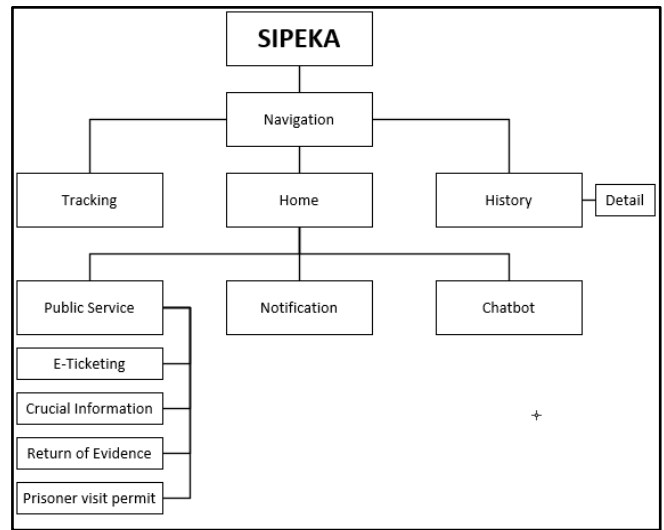


Fig. 7. SIPEKA UI Navigation

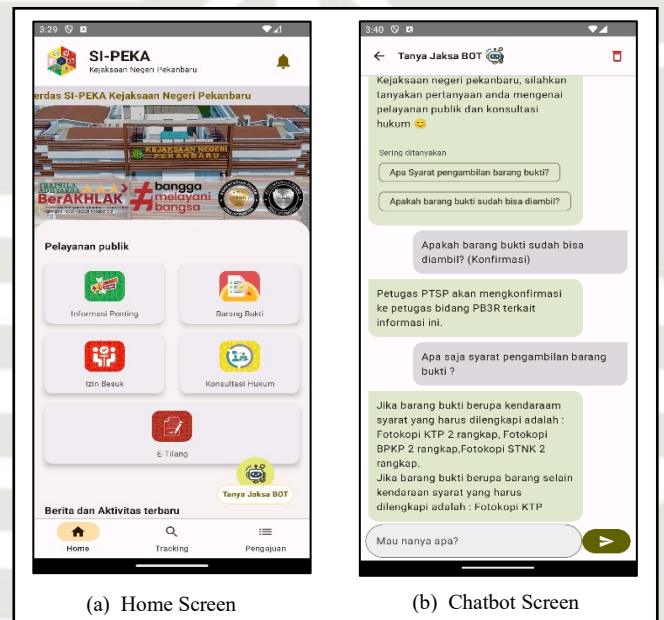


Fig. 8. SIPEKA UI Implementation

Following the completion of the application prototype implementation, a comprehensive testing regimen was undertaken to validate the functionality of each feature and to identify areas for enhancement and refinement. Tests were conducted across a diverse range of devices and Android versions to ensure compatibility and optimal performance. Both virtual emulator and physical devices were utilized during testing procedures.

First, we conducted Blackbox testing to evaluate the UI responsiveness and accessibility of the application across different devices. The application exhibited flawless performance with no discernible issues detected, demonstrating exemplary responsiveness and accessibility. Following successful initial testing, we examined the functionality of all features to ensure they operated as expected. The results, presented in Table 1, show that SI-

SI-PEKA passed all five types of tests with a 100% success rate, confirming its robust and reliable performance.

TABLE I. TEST RESULT OF SIPEKA FUNCTIONALITY

No	Test Cases	Expected Result	Result
1	Application Launching	Show the splash screen and navigate to home screen	Passes
2	Public Service Menu (E-Ticketing, Crucial information services, return of evidence, Prisoner permission permit)	User taps on public service card should be navigate to corresponding screen	Passes
3	All Public Service form submission	User cannot submit the form unless all required field is filled and if succeeded, show the Success screen.	Passes
4	History	Show all previously submitted public service application through the application and if clicked, navigate to the details of corresponding item	Passes
5	Chatbot	User cannot submit the text field when input is empty.	Passes
Conclusion			Legitimate

Subsequently, we conducted an in-depth evaluation of the chatbot feature within the application. Our objective was to ensure that the chatbot's responses were accurate and aligned with user queries, in accordance with the predefined instructions established on the OpenAI platform. Following rigorous testing of five response scenarios using frequently asked question, we confirmed that the chatbot consistently provided responses that met user expectations and accurately addressed their inquiries.

TABLE II. CHATBOT RESPONSE TEST

No	Question	Bot Response	Result
1	How to pay the e-ticket?	Visit tilang.kejaksaan.go.id, enter registration number, check the data, and pay trough available payment option.	Accepted
2	What is required to requesting a return of evidence	If evidence was a vehicle, requirement was a Copy of ID Card, 2 copy of BPKP and 2 copy of STNK, anything else beside a vehicle is Copy of ID Card	Accepted
3	How do I submit important information?	1. Identify Important Information: Make sure the information you are submitting is important and relevant to legal or law enforcement needs. 2. Direct Visit: You can also visit the Pekanbaru District Prosecutor's Office directly to submit this information. Be sure to bring all required documents and valid personal identification.	Accepted
4	How do I request a Prisoner visit permit?	1. Submit a request for permission to visit via official letter addressed to the Pekanbaru District Prosecutor's Office. The letter must include details of the prisoner to be visited, the purpose of the visit, and the date of the planned visit.	Accepted

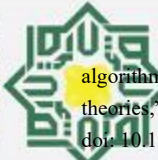
		2. Include valid identity documents, such as KTP or passport. 3. Once approved, a visiting permit letter will be given.	
5	I want to report a criminal act of corruption, how do I do it?	To report a criminal act of corruption, you can submit an Important Information application via the SI-PEKA application or come directly to the nearest prosecutor's office. It is important to remember that reports of criminal acts of corruption must be based on PP No. 43 of 2018	Accepted

V. CONCLUSION

SI-PEKA marks a revolutionary leap in public service applications, integrating advanced AI and the intelligent chatbot, Tanya Jaksa, to enhance service delivery at the Public Prosecutor's Office in Pekanbaru. By leveraging the GPT-4 assistant via the OpenAI Platform API, SI-PEKA provides precise legal consultations, improving user experience and accessibility. Rigorous testing and iterative improvements have made SI-PEKA a robust tool, poised to transform public service delivery. This innovation underscores the potential of AI to streamline processes and empower individuals, exemplifying how technology can enhance efficiency, accessibility, and inclusivity in public services.

REFERENCES

- [1] Hamirul, Darmawanto, Nova Elsyra, and Syahwami, "The Role of Artificial Intelligence in Government Services: A Systematic Literature Review," *Open Access Indones. J. Soc. Sci.*, vol. 6, no. 3, pp. 998–1003, 2023, doi: 10.37275/oaajss.v6i3.163.
- [2] R. Nishant, M. Kennedy, and J. Corbett, "Artificial intelligence for sustainability: Challenges, opportunities, and a research agenda," *Int. J. Inf. Manage.*, vol. 53, no. March, p. 102104, 2020, doi: 10.1016/j.ijinfomgt.2020.102104.
- [3] V. Yfantis, K. Ntalianis, and F. Ntalianis, "Exploring the Implementation of Artificial Intelligence in the Public Sector: Welcome to the Clerkless Public Offices. Applications in Education.," *Adv. Eng. Educ.*, vol. 17, pp. 76–79, 2020, doi: 10.37394/232010.2020.17.9.
- [4] Y. Kim, S. Myeong, and M. J. Ahn, "Living Labs for AI-Enabled Public Services: Functional Determinants, User Satisfaction, and Continued Use," *Sustain.*, vol. 15, no. 11, pp. 1–17, 2023, doi: 10.3390/su15118672.
- [5] H. Lawelai, I. Iswanto, and N. M. Raharja, "Use of Artificial Intelligence in Public Services: A Bibliometric Analysis and Visualization," *TEM J.*, vol. 12, no. 2, pp. 798–807, 2023, doi: 10.18421/TEM122-24.
- [6] A. Eleni and M. Lefteris, "An Overview of Chatbot Technology," *IFIP Adv. Inf. Commun. Technol.*, 2020, doi: https://doi.org/10.1007/978-3-030-49186-4_31.
- [7] N. Aoki, "An experimental study of public trust in AI chatbots in the public sector," *Gov. Inf. Q.*, vol. 37, no. 4, p. 101490, 2020, doi: 10.1016/j.giq.2020.101490.
- [8] "Review on the Application of Artificial Intelligence-Based Chatbots in Public Administration," 2022, pp. 133–155. doi: 10.4018/978-1-6684-5624-8.ch007.
- [9] S. Nzobonimpa, "Artificial intelligence, task complexity and uncertainty: analyzing the advantages and disadvantages of using



algorithms in public service delivery under public administration theories,” *Digit. Transform. Soc.*, vol. 2, no. 3, pp. 219–234, 2023, doi: 10.1108/DTS-03-2023-0018.

- [10] S. Ferdian, A. Hermawan, and E. Edy, “Designing a Chatbot Based on Full-Text Search and 3D Modelling as a Promotional Media,” *JUITA J. Inform.*, vol. 11, no. 1, p. 19, 2023, doi: 10.30595/juita.v11i1.15237.
- [11] F. Makasi, A. Nili, K. C. Desouza, and M. Tate, “A Typology of Chatbots in Public Service Delivery,” *IEEE Softw.*, vol. 39, no. 3, pp. 58–66, 2022, doi: 10.1109/MS.2021.3073674.
- [12] A. Abdelatif, D. Costa, K. Badran, R. Abdalkareem, and E. Shihab, “Challenges in Chatbot Development: A Study of Stack Overflow Posts,” *Proc. - 2020 IEEE/ACM 17th Int. Conf. Min. Softw. Repos. MSR 2020*, pp. 174–185, 2020, doi: 10.1145/3379597.3387472.
- [13] M. Gan, J. Castro, P. Cheng, and V. Ishakian, “Building a chatbot with serverless computing,” *Proc. 1st Int. Work. Mashups Things APIS/MOTA 2016*, pp. 1–4, 2016, doi: 10.1145/3007203.3007217.
- [14] S. Srivastava and T. V. Prabhakar, “Desirable Features of a Chatbot-building Platform,” *Proc. - 2020 IEEE Int. Conf. Humaniz. Comput. Commun. with Artif. Intell. HCCA 2020*, pp. 61–64, 2020, doi: 10.1109/HCCA49649.2020.00016.
- [15] E. Hernandez, S. Schwettmann, D. Bau, T. Bagashvili, A. Torralba, and J. Andreas, “OPT-4: A REVIEW ON ADVANCEMENTS AND OPPORTUNITIES IN NATURAL LANGUAGE PROCESSING,” no. 2, pp. 1–21, 2022.
- [16] M. Aydin, Ö. Karaarslan, “Is ChatGPT Leading Generative AI? What is Beyond Expectations?,” *SSRN Electron. Journal.*, 2023, doi: <https://doi.org/10.2139/ssrn.4341500>.
- [17] K. P. Awasth P, “CHATGPT: THE POWER OF AI,” *INDIAN J. Appl. Res.*, 2023, doi: <https://doi.org/10.36106/ijar/0624476>.
- [18] S. Shafeeg, A. Shazhaev, I. Mihaylov, D. Tularov, A., & Shazhaev, “Voice Assistant Integrated with Chat GPT.,” *Indones. Comput. Sci.*, 2023, doi: <https://doi.org/10.33022/ijcs.v12i1.3146>.
- [19] I. Wawointana, I. Pangkey, and J. Langkay, “The Performance of Bureaucrats in Public Services,” vol. 383, no. Ic55, pp. 735–743, 2019, doi: 10.2991/ic55-19.2019.107.
- [20] R. Anu, Affan., Andy, Kurniawan., Yenny, Aman, Serah., Siswadi., Slamet, Bambang, “Public Service: The Principle of Equality, Neutrality, and Participation.,” 2020.
- [21] M. Morandin-Ahuerma, “International Journal of Research Publication and Reviews What is Artificial Intelligence?,” *Int. J. Res. Publ. Rev.*, vol. 3, no. 12, p. 5500, 2022, [Online]. Available: www.ijrpr.com
- [22] C. Zhang and Y. Lu, “Study on artificial intelligence: The state of the art and future prospects,” *J. Ind. Inf. Integr.*, vol. 23, no. March, p. 100224, 2021, doi: 10.1016/j.jii.2021.100224.
- [23] D. Daimari, S. Mondal, B. Brahma, and A. Nag, “Favorite Book Recommendation System Using Machine Learning Algorithms,” *J. Appl. Eng. Technol. Sci.*, vol. 4, no. 2, pp. 983–991, 2023, doi: 10.37385/jaets.v4i1.1925.
- [24] G. Vilone and L. Longo, “Notions of explainability and evaluation approaches for explainable artificial intelligence,” *Inf. Fusion*, vol. 6, no. June, 2020, pp. 89–106, 2021, doi: 10.1016/j.inffus.2021.05.009.
- [25] J. Chen, P. Chen, and Z. Lin, “Artificial Intelligence in Education: Review,” *IEEE Access*, vol. 8, pp. 75264–75278, 2020, doi: 10.1109/ACCESS.2020.2988510.
- [26] W. Haoyuan, “Chatbot in the Service Industry: Challenges and Perspectives”.
- [27] O. Vázquez Bautista, “Chatbots: la evolución de la atención al cliente en la era digital.,” *Con-Ciencia Boletín Científico la Esc. Prep. No. 3*, vol. 10, no. 20, pp. 24–27, 2023, doi: 10.29057/prepa3.v10i20.10690.
- [28] N. Nicole, “ChatGPT,” *Nervenheilkunde*, doi: 10.1055/a-1948-8785.
- [29] A. S. Lokman and M. A. Ameen, *Modern chatbot systems: A technical review*, vol. 881, no. 3. Springer International Publishing, 2019. doi: 10.1007/978-3-030-02683-7_75.
- [30] L. Athota and A. Rana, “2022 10th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions), ICRITO 2022,” *2022 10th Int. Conf. Reliab. Infocom Technol. Optim. (Trends Futur. Dir. ICRITO 2022)*, pp. 619–622, 2022.
- [31] Yuliska, N. F. Najwa, and K. U. Syaliman, “the Implementation of Deep Learning Techniques in Developing Conversational Chatbot As the Source of Vaccination Information,” *J. Appl. Eng. Technol. Sci.*, vol. 4, no. 1, pp. 532–538, 2022, doi: 10.37385/jaets.v4i1.1340.
- [32] L. T. Khrais and A. M. Alghamdi, “The role of mobile application acceptance in shaping e-customer service,” *Futur. Internet*, vol. 13, no. 3, pp. 1–13, 2021, doi: 10.3390/fi13030077.
- [33] A. K. Y. Tang, “A systematic literature review and analysis on mobile apps in m-commerce: Implications for future research,” *Electron. Commer. Res. Appl.*, vol. 37, no. February, p. 100885, 2019, doi: 10.1016/j.elerap.2019.100885.
- [34] Z. A. Andriawan, R. Pratama, and Khadijah, “Usability Testing of Multifinance Mobile Application for End-Customer (Case Study: PT.XYZ),” *ICICoS 2020 - Proceeding 4th Int. Conf. Informatics Comput. Sci.*, 2020, doi: 10.1109/ICICoS51170.2020.9298977.
- [35] A. A. Zulfahmi, R. Sadikin, and E. H. Hermaliani, “Hybrid Between Pieces Framework and Technology Acceptance Model (Tam) in Quality Testing of Mobile Application Office Automation System (Kemenkeu),” *J. Appl. Eng. Technol. Sci.*, vol. 4, no. 1, pp. 286–306, 2022, doi: 10.37385/jaets.v4i1.1087.
- [36] A. Golmohammadi, M. Zhang, and A. Arcuri, “Testing RESTful APIs: A Survey,” *ACM Trans. Softw. Eng. Methodol.*, 2023, doi: 10.1145/3617175.
- [37] L. Busalire, Onesmus, Emeka., Soichiro, Hidaka., Shaoying, “A Practical Model Driven Approach for Designing Security Aware RESTful Web APIs Using SOFL. IEICE Transactions on Information and Systems,” 2023, doi: 10.1587/transinf.2022edp7194.
- [38] I. Ahmad, E. Suwarni, R. I. Borman, Asmawati, F. Rossi, and Y. Jusman, “Implementation of RESTful API Web Services Architecture in Takeaway Application Development,” *2021 1st Int. Conf. Electron. Electr. Eng. Intell. Syst. ICE3IS 2021*, no. July, pp. 132–137, 2021, doi: 10.1109/ICE3IS54102.2021.9649679.
- [39] OpenAI, “Api Reference.” Accessed: May 08, 2024. [Online]. Available: <https://platform.openai.com/docs/api-reference/introduction>
- [40] OpenAI, “Assistant API (Beta).” Accessed: May 08, 2024. [Online]. Available: <https://platform.openai.com/docs/assistants/overview>



LAMPIRAN A POSTER KEGIATAN

© Hak cipta milik UIN Suska Riau

State Islamic University of Sultan Syarif Kasim II

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, penyusunan laporan, penulisan kritik atau tinjauan suatu masalah.
 - b. Pengutipan tidak merugikan kepentingan yang wajar UIN Suska Riau.
2. Dilarang mengumpulkan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.

ISITDI 2024
Faculty of Information Technology
Universitas Andalas, Indonesia

CALL FOR PAPERS

Accepted papers will be submitted for inclusion into IEEE Xplore subject to meeting IEEE Xplore's scope and quality requirements

TOPICS
Services Computing and Services Computing Systems
Smart Services Systems and Engineering
Digital Security, Forensic and Cyber Law
Digital Transformation and Innovation
IT Governance and Management
Internet of Things
Computing and Engineering

IMPORTANT DATES
Full Paper Submission Deadline **EXTENDED**
April 7, 2024 • **May 1, 2024**
Acceptance Notification
June 1, 2024
Camera Ready
June 20, 2024

SUBMISSION METHOD
By Electronic Submission System :
<http://isitdi.conference.unand.ac.id>

KEYNOTE SPEAKERS

Will be held
JULY 24th - 25th, 2024

Venue
HYBRID (ONLINE & OFFLINE)
Bukittinggi City, West Sumatera, Indonesia

WELCOMING SPEECH
Dr. Efa Yonnedi, S.E., MPPM, Akt., CA, CRGP
Rector of Universitas Andalas

OPENING SPEECH
Dra. Siti Nugraha Mauludiah, MIA
Direktur Jenderal Informasi dan Diplomasi Publik
Kementerian Luar Negeri Republik Indonesia

2nd ISITDI 2024
2nd International Symposium on Information Technology and Digital Innovations
<http://isitdi.conference.unand.ac.id/>

Contact Person
Desta Perdana, MT. -02 852 7170-4356
esigma@unand.ac.id / esigma@isitdi2024.unand.ac.id

Gambar A.1. Poster Kegiatan ISITDI *International Conference* 2024



- 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
 - b. Pengutipan tidak merugikan kepentingan yang wajar UIN Suska Riau.
 2. Dilarang mengumpulkan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.

LAMPIRAN B

LETTER OF ACCEPTANCE



UNIVERSITAS ANDALAS
 FACULTY OF INFORMATION TECHNOLOGY
**INTERNATIONAL SYMPOSIUM ON INFORMATION
 TECHNOLOGY AND DIGITAL INNOVATIONS (ISITDI) 2024**
 Limau Manis, Pauh, Padang City, West Sumatra 25175
 Website: <http://isitdi.conference.unand.ac.id/>



LETTER OF ACCEPTANCE

May 20, 2024

Dear Authors,

On behalf of the INTERNATIONAL SYMPOSIUM ON INFORMATION TECHNOLOGY AND DIGITAL INNOVATIONS (ISITDI) 2024's committee, we are pleased to inform you that your paper with registration number "1571029990", entitled:

"Transforming Public Service: AI Chatbot Integration in SI-PEKA Mobile App Development"

Written by "M. Haikel Oksama"

has been reviewed and **ACCEPTED** for an oral presentation at the INTERNATIONAL SYMPOSIUM ON INFORMATION TECHNOLOGY AND DIGITAL INNOVATIONS (ISITDI) 2024.

We congratulate your achievement. The technical issues about the presentation will be informed later. Thank you very much for submitting and we look forward to your participation in the ISITDI 2024.

Kindest regard,

Chairman of ISITDI 2024



Dr. Eng. Ir. Budi Rahmadya, M.Eng

Gambar B.1. Letter of Acceptance



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
 - b. Pengutipan tidak merugikan kepentingan yang wajar UIN Suska Riau.
2. Dilarang mengumpukan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.

LAMPIRAN C

COPYRIGHT RECEIPT

IEEE COPYRIGHT AND CONSENT FORM

To ensure uniformity of treatment among all contributors, other forms may not be substituted for this form, nor may any wording of the form be changed. This form is intended for original material submitted to the IEEE and must accompany any such material in order to be published by the IEEE. Please read the form carefully and keep a copy for your files.

Transforming Public Service: AI Chatbot Integration in SI-PEKA Mobile App Development

Mr. Muhammad Haikel Oksama, Mr. Arif Marsal, Dr. Muhammad Luthfi Hamzah, Mr. Syaifullah Syaifullah and Mr. Nesdi Evriyan Rozanda

2024 2nd International Symposium on Information Technology and Digital Innovation (ISITDI)

COPYRIGHT TRANSFER

The undersigned hereby assigns to The Institute of Electrical and Electronics Engineers, Incorporated (the "IEEE") all rights under copyright that may exist in and to: (a) the Work, including any revised or expanded derivative works submitted to the IEEE by the undersigned based on the Work; and (b) any associated written or multimedia components or other enhancements accompanying the Work.

GENERAL TERMS

1. The undersigned represents that he/she has the power and authority to make and execute this form.
2. The undersigned agrees to indemnify and hold harmless the IEEE from any damage or expense that may arise in the event of a breach of any of the warranties set forth above.
3. The undersigned agrees that publication with IEEE is subject to the policies and procedures of the [IEEE PSPB Operations Manual](#).
4. In the event the above work is not accepted and published by the IEEE or is withdrawn by the author(s) before acceptance by the IEEE, the foregoing copyright transfer shall be null and void. In this case, IEEE will retain a copy of the manuscript for internal administrative/record-keeping purposes.
5. For jointly authored Works, all joint authors should sign, or one of the authors should sign as authorized agent for the others.
6. The author hereby warrants that the Work and Presentation (collectively, the "Materials") are original and that he/she is the author of the Materials. To the extent the Materials incorporate text passages, figures, data or other material from the works of others, the author has obtained any necessary permissions. Where necessary, the author has obtained all third party permissions and consents to grant the license above and has provided copies of such permissions and consents to IEEE

You have indicated that you DO wish to have video/audio recordings made of your conference presentation under terms and conditions set forth in "Consent and Release."

CONSENT AND RELEASE

1. In the event the author makes a presentation based upon the Work at a conference hosted or sponsored in whole or in part by the IEEE, the author, in consideration for his/her participation in the conference, hereby grants the IEEE the unlimited, worldwide, irrevocable

Gambar C.1. IEEE Copyright Receipt

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 mengumpulkan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.

LAMPIRAN D

LEMBAR WAWANCARA

FORM INTERVIEW

PENGUMPULAN DATA KEBUTUHAN APLIKASI

SIGURINDAM 295 / SIPEKA


Nama Interviewer : M. Haikel Oksama (12050313240)
 Lokasi : Kejaksaan Negeri Pekanbaru, Pekanbaru, Riau
 Stakeholder I : Yongki Arvius, S.H., M.H.
 Stakeholder II : Angraini, S.Kom, M.Eng., Ph.D.
 Jabatan/Posisi : Kasubag Pembinaan

1	Bagaimana model aplikasi android yang ingin dikembangkan dari aplikasi sebelumnya?	Bentuknya hampir sama seperti aplikasi kemarin, hanya saja dalam aplikasi ini pelayanan nya hanya yang disediakan langsung oleh pihak kejaksaan negeri pekanbaru, yaitu Konsultasi Hukum, Informasi Penting, dan Pengembalian Barang Bukti
2	Apa harapan yang bisa didapatkan dari pengembangan aplikasi ini?	Aplikasi baru harusnya dapat digunakan secara lebih umum kepada masyarakat dan kalau bisa kita akan mendigitalisasikan seluruh pelayanan yang ada di kantor untuk kemudahan masyarakat dan pegawai.
3	Apa yang membedakan aplikasi baru dengan aplikasi sebelumnya?	Untuk aplikasi kita saat ini akan di integrasikan dengan pelayanan konsultasi hukum berbasis AI (Artificial Intelligence) . Nantinya akan ada chatbot yang kita beri nama Tanya Jaksa pada aplikasi. Disitu user dapat menanyakan segala sesuatu yang berkaitan dengan ruang lingkup konsultasi hukum dan pelayanan di Kejaksaan negeri pekanbaru.
4	Apakah ada data yang akan kita gunakan untuk data chatbot nantinya?	Boleh, nanti saya akan kirimkan.
5	Dalam halaman utama aplikasi, elemen apa saja yang dibutuhkan?	Gedung kejaksaan negeri pekanbaru, Logo BERAKHLAK , dan Berita terbaru dari kita bisa diambil dari Instagram resmi.
6	Apakah di setiap layanan fitur dan fungsinya sama dengan aplikasi sebelumnya?	Sama, namun bisa ditambahkan nomor wa call center masing masing layanan, ketika di klik akan langsung diarahkan ke WA. Dan juga pada layanan Konsultasi Hukum bisa dimasukkan juga Chatbot kita, mungkin referensinya bisa merujuk ke aplikasi serupa.

7	Apakah nantinya akan di publish ke playstore?	Iya, aplikasi ini akan kita publish ke playstore jika sudah selesai.
8	Kira kira, ekspektasi bapak/ibu pengerjaan nya butuh waktu berapa lama?	Setidaknya selesai sebelum Lebaran di bulan Ramadhan.
9	Bagaimana apakah ada logo aplikasi kita?	Ada, nanti saya akan kirimkan di WA

Mengetahui:

Stakeholder I



Yongki Arvius, S.H., M.H.

Gambar D.1. Lembar Wawancara

LAMPIRAN E

DOKUMENTASI PENELITIAN

© Hal

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 mengumpukan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.



Gambar E.1. Diskusi Pembuatan Aplikasi Bersama *Stakeholder*



Gambar E.2. Pengujian Aplikasi Bersama *Stakeholder* dan Kajari

of Sultan Syarif K

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 mengumpukan dan memperbanyak sebagian atau seluruh karya tulis ini dalam bentuk apapun tanpa izin UIN Suska Riau.



Gambar E.3. *Launching Aplikasi SI-PEKA*



DAFTAR RIWAYAT HIDUP



M. Haikel Oksama lahir di Kota Pekanbaru, pada tanggal 11 Oktober 2001. Peneliti merupakan anak dari Bapak (Alm) Azwar Ibrahim, S.H dan Ibu Delvia Darwis. Peneliti merupakan anak bungsu dari dua bersaudara, yang mana Andre Ano Fabela adalah abang kandung peneliti satu-satunya. Peneliti bersekolah di SDN 110 Pekanbaru pada tahun 2008 dan menamatkan pendidikan sekolah dasar pada tahun 2014. Pada tahun yang sama pula peneliti melanjutkan pendidikan di SMPN 20 Pekanbaru dan menamatkan pendidikan pada tahun 2017. Tahun 2017 peneliti melanjutkan pendidikan di SMAN 15 Pekanbaru dan menamatkan pendidikan pada tahun 2020. Peneliti melanjutkan pendidikan Strata Satu (S1) di Universitas Islam Negeri Sultan Syarif Kasim Riau pada Fakultas Sains dan Teknologi, Program Studi Sistem Informasi pada tahun 2020. Selama menjadi mahasiswa, peneliti pernah melaksanakan Kerja Praktek di PT. Perkebunan Nusantara V dengan membantu membuat website dan sistem pada kantor Nusalima Medika. Peneliti juga mengikuti Pengabdian Kuli-ah Kerja Nyata atau KKN di desa Parit I/II, Kecamatan Sungai Apit, Kabupaten Siak sebagai Koordinator Desa. Peneliti tergabung dalam *Study Club* yang bernama *Google Developer Student (GDSC) UIN Suska Riau* pada bagian *Developer and Speaker* pada tahun 2021 - 2022. Peneliti juga pernah menjadi tim sukses Kemah Bakti Mahasiswa atau KBM Sistem Informasi sebagai panitia divisi konsumsi pada tahun 2022. Peneliti juga merupakan lulusan kampus merdeka *Bangkit Academy 2023 Batch 2* dibawah naungan Google, GOTO, dan Traveloka dalam alur belajar *Mobile Development* selama satu semester penuh. Peneliti juga tergabung bersama startup ATA Solusi Indonesia pada tahun 2023 sebagai *Web dan Mobile programmer*. Pada penelitian Tugas Akhir ini penulis mengambil judul "Transformasi Pelayanan Publik: Integrasi *Chatbot* AI Pada Proses Pengembangan Aplikasi *Mobile* SI-PEKA".

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 program
 - 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.