Leveraging Artificial Intelligence for Enhanced Diplomatic Operations: A Case Study Proposal for the Ministry of Foreign Affairs of the Republic of Indonesia

Chapter 1: Introduction

1.1 Background: AI in Governance and the Evolving Landscape of Diplomacy

The advent of Artificial Intelligence (AI) is catalyzing a paradigm shift in public administration globally, offering unprecedented opportunities to enhance governmental operations and service delivery. AI technologies are increasingly recognized for their potential to improve efficiency, accuracy, and transparency in administrative processes.[1] By automating routine tasks, AI can liberate public servants to concentrate on more strategic and complex initiatives. Furthermore, AI's capacity to process and analyze vast datasets supports more informed decision-making, enables the personalization of public services to meet individual citizen needs, and allows for the optimization of resource allocation by predicting demand for essential services.[1] These improvements can, in turn, foster greater public trust in governmental institutions.

Within this broader trend, the domain of diplomacy is also undergoing a significant transformation driven by AI. The increasing complexity and interconnectivity of international relations necessitate more sophisticated tools for analysis and engagement.[2] AI technologies are being leveraged to provide decision support to diplomats, assist in drafting speeches and official documents, analyze geopolitical trends, and even support negotiation processes.[2] As global interconnectivity deepens, traditional diplomatic practices are being augmented by AI-driven tools that enhance communication, data analysis, and strategy formulation, marking a shift towards AI-augmented diplomatic practices.[2]

However, this integration of AI into diplomacy is not without its complexities. The very global interconnectivity that AI can help manage can also be exacerbated by AI-driven phenomena, such as the rapid spread of information and disinformation, potentially increasing the volatility of the diplomatic landscape. Therefore, the adoption of AI in foreign ministries requires careful consideration of not only the technological capabilities but also the new forms of complexity and potential conflict that AI itself might introduce. Effective governance and ethical oversight are thus paramount. Moreover, the emergence of AI tools that aim to democratize diplomatic analysis, such as the Bilateral Navigator project which analyzes relationships between all 193 UN member states [4], presents both opportunities and challenges. While such tools can

empower smaller nations or specialized units by providing access to advanced analytical capabilities [5], they may also create new dependencies on AI providers or specific data sources, potentially influenced by geopolitical factors like the U.S. AI Diffusion Rule, which places restrictions on AI technology access for certain nations.[6]

1.2 Problem Statement: Opportunities and Challenges for AI Adoption in the Indonesian Ministry of Foreign Affairs (Kemlu RI)

The Republic of Indonesia has embarked on an ambitious digital transformation journey, underscored by its National Artificial Intelligence Strategy (Stranas KA) for 2020-2045.[7] This strategy envisions AI as a cornerstone of national development and bureaucratic reform. For the Ministry of Foreign Affairs (Kementerian Luar Negeri Republik Indonesia, hereafter Kemlu RI), AI presents significant opportunities to enhance its diplomatic functions. These include improving public diplomacy through sophisticated media analysis and sentiment tracking [9], streamlining consular services for Indonesian citizens abroad [11], supporting evidence-based foreign policy formulation [2], and managing complex international relations more effectively.[4] Kemlu RI has already initiated some digital services, such as the SafeTravel application and the Peduli WNI portal for citizen protection [11], which provide a foundation for further AI integration.

Despite these opportunities, the path to AI adoption for Kemlu RI is fraught with challenges. Indonesia, as a whole, faces a significant digital talent gap, with a projected need for an additional 9 million tech workers by 2030.[7] This scarcity of skilled AI professionals is a major constraint. Infrastructural limitations, particularly in ensuring consistent and high-speed connectivity nationwide, also pose hurdles.[7] Critical issues of data governance, data security, and ensuring the ethical use of AI are paramount, given the sensitivity of diplomatic information and the potential for algorithmic bias.[1] Furthermore, the underrepresentation of Bahasa Indonesia in global AI research datasets presents a specific technical challenge for developing or adapting NLP tools for local contexts.[7] This is not merely a technical hurdle but a strategic vulnerability if Kemlu RI aims to use AI for a nuanced understanding of domestic public opinion or local media narratives relevant to foreign policy. Inaccurate or biased insights could result from AI tools trained primarily on non-Indonesian datasets or poorly representative Indonesian datasets.

The Indonesian public sector, in general, has been observed to lag behind regional peers in AI adoption [13], and there is a risk of succumbing to "techno-solutionism"—an optimistic belief in technology's capacity to solve complex societal problems without adequate consideration of social, institutional, and contextual factors.[15] Such an

approach can lead to ineffective or even counterproductive AI implementations, particularly if the necessary ecosystem of data infrastructure, governance, incentives, inclusive design, and a skilled workforce is not adequately developed.[15] Given these multifaceted challenges and the broad scope of potential AI applications, there is a clear need to identify a focused, feasible AI project for Kemlu RI. Such a project should align with the Ministry's strategic objectives, be realistically researchable and implementable within the timeframe of an MSIT thesis (approximately 6 months for the initial research and proposal development), and contribute to building foundational AI capabilities within the Ministry.

1.3 Research Questions (RQs)

This thesis proposal seeks to address the following research questions:

- RQ1: What are the most promising and feasible AI applications for the Indonesian Ministry of Foreign Affairs to enhance its diplomatic functions (e.g., public diplomacy, consular services, policy analysis) within the next 3-5 years, considering the national AI strategy and current resource constraints?
- RQ2: Specifically, how can Natural Language Processing (NLP) techniques be applied to analyze Bahasa Indonesia media and public discourse to provide actionable insights for Kemlu RI's public diplomacy efforts?
- RQ3: What are the key technical, organizational, ethical, and training-related challenges that Kemlu RI would face in implementing the proposed NLP-based AI solution, and what strategies can be adopted to mitigate these challenges?
- RQ4: What performance metrics are appropriate for evaluating the effectiveness and impact of the proposed AI solution within Kemlu RI?

1.4 Research Objectives (ROs)

The objectives of this research are:

- RO1: To review the state-of-the-art in AI applications for public administration and diplomacy, identifying global best practices relevant to Kemlu RI.
- RO2: To analyze Indonesia's National AI Strategy, current AI adoption trends in the Indonesian public sector, and existing digital initiatives within Kemlu RI.
- RO3: To propose a specific, feasible NLP-based AI solution for Kemlu RI focusing on public diplomacy analysis of Bahasa Indonesia media, detailing its conceptual framework, data requirements, and potential tools.[16]
- RO4: To identify and analyze the potential challenges (technical, organizational, ethical, training) for the proposed AI solution and recommend mitigation strategies.
- RO5: To develop a framework for training MFA personnel and define key

performance indicators (KPIs) for the proposed AI system.

1.5 Significance of the Study

This research holds significance at multiple levels:

- **Academic Contribution:** The study will contribute to the growing body of knowledge on AI implementation within the public sectors of developing countries, with a specific focus on the unique context of a Ministry of Foreign Affairs. It will also offer insights into the practical application of NLP techniques for low-resource languages like Bahasa Indonesia within the diplomatic domain.
- **Practical Contribution:** The research will provide Kemlu RI with a concrete proposal for leveraging AI to potentially enhance its public diplomacy effectiveness, improve operational efficiency, and support more data-driven decision-making. It aims to offer a roadmap for a pilot project that can serve as a stepping stone for broader AI adoption. The potential for AI to improve governance is substantial [1], and this study seeks to translate that potential into actionable insights for Kemlu RI.
- **Policy Contribution:** The findings and recommendations can inform Indonesian policymakers about the practical aspects of AI adoption in government. It will highlight critical challenges, success factors, and ethical considerations relevant to Indonesia's ongoing digital transformation and its ambitions to become a significant player in the global AI landscape.[7]

1.6 Scope and Limitations of the Research

The scope of this MSIT thesis research will be to develop a proposal for an NLP-based AI solution tailored for public diplomacy analysis within Kemlu RI. The research will involve an extensive literature review, analysis of secondary data (including government reports, academic publications, and white papers), and the development of a conceptual framework for the proposed AI system. The primary linguistic focus for the NLP component will be Bahasa Indonesia, acknowledging its underrepresentation in current AI datasets [7] and the availability of some foundational NLP resources.[16] The proposed solution will be designed with feasibility for a typical MSIT thesis project in mind, potentially encompassing a prototype development or an in-depth feasibility study that can be accomplished within a 6-month timeframe for the thesis work itself. This proposal document is the initial step, outlining the research plan.

The research acknowledges several limitations:

- Access to sensitive internal Kemlu RI data or direct, formal access to diplomats for

primary data collection (e.g., interviews, surveys) is not assumed for this proposal stage. The subsequent thesis work would need to develop strategies to address this, potentially through publicly available statements, reports, or expert consultations if feasible.
- The field of AI is characterized by rapid advancements. Consequently, some state-of-the-art aspects identified at the outset of the research might evolve by the time of the thesis completion.
- Due to the time constraints inherent in a Master's thesis, the proposed AI solution will focus on one specific application area (public diplomacy analysis) rather than attempting a comprehensive AI strategy for the entire Ministry.
- This proposal, and the initial phases of the thesis, will primarily rely on publicly available information and academic sources.

1.7 Structure of the Thesis

This thesis proposal is structured according to standard academic guidelines [18] and is organized into five main chapters:

- **Chapter 1: Introduction:** Provides the background, problem statement, research questions and objectives, significance, scope and limitations, and the overall structure of the thesis.
- **Chapter 2: Literature Review:** Explores the state-of-the-art in AI for public sector and diplomatic applications, AI in public administration globally, AI in modern diplomacy, the Indonesian AI context, and ethical frameworks for AI governance.
- **Chapter 3: Proposed AI-Driven Solution for the Indonesian Ministry of Foreign Affairs:** Details a specific AI project focusing on AI-enhanced public diplomacy monitoring and analysis, including its conceptual framework, data requirements, and alignment with Kemlu RI's objectives.
- **Chapter 4: Research Methodology for Thesis Development:** Outlines the research design, data collection methods, data analysis plan, framework for training and capacity building, proposed performance metrics, and strategies for addressing ethical considerations relevant to the development of the thesis.
- **Chapter 5: Expected Outcomes, Project Timeline, and Conclusion:** Discusses the anticipated contributions, provides a detailed timeline for the thesis research project, outlines required resources, and offers concluding remarks with directions for future research.
- **References:** Lists all cited sources.
- **Appendices:** May include supplementary materials such as lists of data sources or ethical checklists.

Chapter 2: Literature Review

2.1 The State-of-the-Art (SOTA) in Artificial Intelligence for Public Sector and Diplomatic Applications

2.1.1 Key AI Technologies (e.g., NLP, Machine Learning, Predictive Analytics)

Several core AI technologies are proving instrumental in transforming public sector operations and diplomatic practices. Natural Language Processing (NLP) enables machines to understand, interpret, and generate human language. Its applications in government include text analysis for policy insights, automated translation services, sentiment analysis of public discourse, document summarization, and the development of chatbots for citizen services.[2] Machine Learning (ML), a subset of AI, allows systems to learn from data without being explicitly programmed. ML algorithms are crucial for pattern recognition in large datasets, enabling predictive analytics for forecasting trends or service demands, and providing data-driven decision support to officials.[20] Predictive analytics, often powered by ML, is specifically used to forecast future events, such as potential international conflicts, shifts in public opinion, or the demand for specific public services, allowing for proactive rather than reactive responses.[1] These technologies are continually maturing, with increasingly sophisticated models and more accessible tools becoming available, lowering the barrier to entry for governmental adoption. For instance, advanced NLP models like topic models, word embeddings, and Large Language Models (LLMs) are now capable of converting vast amounts of unstructured text into structured numerical data, which can then be used for detailed analysis in fields like international relations, facilitating real-time monitoring and even conflict forecasting.[20]

2.1.2 SOTA Applications in International Relations and Foreign Policy

The application of AI in international relations and foreign policy is rapidly advancing beyond simple automation. Sophisticated AI tools are being developed for geopolitical analysis and conflict prediction, capable of sifting through massive, multi-modal datasets to identify subtle patterns and potential flashpoints.[20] An example of SOTA evaluation in this domain is the Critical Foreign Policy Decision (CFPD) Benchmark, designed to assess how LLMs respond to complex geopolitical prompts and to understand their inherent decision-making tendencies and potential biases in national security contexts.[24] This benchmark highlights a critical understanding: country-specific biases in AI models are a tangible concern that policymakers must address.

AI is also increasingly used to analyze diplomatic communications and support

negotiation processes, for example, by simulating dialogues or identifying areas of potential compromise.[2] Projects like the "Bilateral Navigator" exemplify this trend, employing AI to analyze multifaceted relationships between all 193 UN member states, thereby aiming to democratize diplomatic analysis and enhance international cooperation through data-driven insights.[4] Furthermore, AI-powered early warning systems, tools for simulating diplomatic scenarios and war games, and platforms for crisis response management are becoming integral to modern statecraft.[4]

A significant geopolitical development impacting AI adoption is the "Framework for Artificial Intelligence Diffusion" (AI Diffusion Rule) introduced by the United States.[6] This framework establishes a tiered system for access to advanced AI technologies, particularly high-performance semiconductors (GPUs). Indonesia has been placed in Tier 2, which implies stricter caps on GPU access compared to Tier 1 nations.[6] This ruling has considerable implications for countries like Indonesia that have staked their AI ambitions on expanded compute access. One potential consequence is an incentivized shift towards open-source AI development as an alternative path to acquiring advanced capabilities.[6] This could position nations like Indonesia to foster indigenous open-source AI ecosystems, possibly in collaboration with other nations facing similar restrictions, and even become regional proponents of open-source AI.

The move towards complex sense-making and prediction using AI in international relations, while powerful, introduces significant risks. Algorithmic bias embedded in AI systems can lead to flawed decision-making processes, potentially undermining the fairness of diplomatic resolutions or exacerbating international tensions.[2] The outputs of AI systems, especially those dealing with sensitive geopolitical data, must be critically evaluated and contextualized. For a nation like Indonesia, with its "independent and active" foreign policy [26], it is crucial to ensure that any adopted AI tools do not inadvertently import biases from their training data or design that could conflict with national interests or values. Therefore, the adoption of SOTA AI by Kemlu RI must be accompanied by robust frameworks for testing, validation, transparency, and ongoing ethical oversight. The AI Diffusion Rule further complicates this landscape, potentially channeling Indonesia's AI development trajectory and necessitating strategic decisions regarding technological dependencies and partnerships.

2.2 AI in Public Administration: Global Perspectives

2.2.1 Benefits and Potential

The integration of AI into public administration promises a multitude of benefits. AI technologies can significantly enhance the efficiency, accuracy, and transparency of

administrative services provided to both the public and businesses.[1] By automating routine tasks and administrative processes, AI can improve operational efficiency, thereby freeing up civil servants to focus on more complex and strategic initiatives that require human judgment and creativity.[1] The capacity of AI to process and analyze vast amounts of data supports more informed decision-making, enabling governments to improve existing services and develop new ones that are better tailored to citizen needs.

Furthermore, AI facilitates the personalization of public services by analyzing individual citizen requirements and preferences, which can lead to increased trust in service providers and higher levels of citizen satisfaction.[1] AI also plays a crucial role in optimizing the allocation of resources and predicting the demand for essential services, such as education and healthcare, ensuring a fairer and more efficient distribution.[1] Ultimately, the thoughtful application of AI can contribute to creating a safer, more efficient, and citizen-oriented environment by modernizing administrative procedures and making government operations more responsive to the evolving needs of society, potentially leading to an increase in public trust in government agencies.[1]

2.2.2 Challenges and Risks

Despite the significant potential, the transition to AI-enhanced public administration is accompanied by a range of challenges and risks. Algorithmic bias is a primary concern, where AI systems may perpetuate or even amplify existing societal biases present in their training data, leading to unfair or discriminatory outcomes.[1] Cybersecurity risks are also heightened, as AI systems can become targets for malicious attacks, and vulnerabilities could lead to significant disruptions or data breaches.[14] Workforce adaptation presents another major hurdle, as public sector employees require new skills and training to effectively work with and manage AI technologies.[14]

Ethical issues extend beyond bias to include concerns about data privacy, transparency in decision-making, and accountability when AI systems make errors or cause harm.[1] The phenomenon of "techno-solutionism," where technology is viewed as a panacea for complex societal problems without adequate consideration of the social, institutional, and contextual factors, poses a significant risk.[15] AI and digital technologies often fail to deliver their intended benefits when these crucial social dimensions are overlooked.[15] Systemic issues within public administration, such as rigid budgetary policies that limit agility and fragmented procurement processes, can further impede effective digital transformation and AI adoption.[15] Finally, building and

maintaining a skilled digital workforce within the public sector is essential, moving beyond merely maximizing the efficiency of existing staff to actively recruiting specialized digital talent.[15]

2.2.3 International Best Practices in Governmental AI Adoption

Drawing from global experiences, several best practices emerge for successful AI adoption in government. A foundational element is the development of national AI strategies through multi-stakeholder consultation, involving government, industry, academia, and civil society, as exemplified by Indonesia's own approach to its Stranas KA.[7] Establishing clear legal and ethical frameworks is crucial to guide AI development and deployment responsibly, ensuring alignment with societal values and mitigating risks.[7]

Significant and sustained investment in digital infrastructure, including data management systems and connectivity, is a prerequisite for effective AI implementation.[7] Equally important is investment in talent development programs to cultivate a skilled AI workforce within the public sector and the broader economy.[7] Fostering public-private partnerships can accelerate innovation and leverage expertise from the private sector for public good.[8]

Governments are increasingly adopting a balanced regulatory approach that aims to foster innovation while proactively addressing the risks associated with AI.[7] This often involves creating regulatory sandboxes for experimentation and promoting intergovernmental collaboration. The establishment of dedicated AI oversight bodies, such as the proposed National Agency for Artificial Intelligence in Indonesia [7], can help coordinate policies, set standards, and ensure coherence across different sectors.

A critical learning from various implementations is that the success of AI in public administration often hinges less on the sophistication of the AI technology itself and more on the maturity of the surrounding "ecosystem".[15] This ecosystem encompasses robust data infrastructure, clear data governance policies, adequate human capital with relevant skills, adaptive and agile procurement and budgetary policies, and a culture that embraces innovation while managing risks. Without these foundational elements, even the most advanced AI tools are likely to underperform or fail to deliver their intended benefits.

Furthermore, there exists an inherent tension between the drive for AI-led efficiency and automation in public services [1] and the imperative to uphold human oversight, ethical considerations, and facilitate workforce adaptation.[14] This tension is

particularly acute in domains like diplomacy, which rely heavily on human nuance, trust, and interpersonal skills.[5] Over-reliance on AI for tasks requiring deep human judgment or empathy could lead to significant errors, misunderstandings, or an erosion of trust. Therefore, best practices increasingly emphasize a "human-in-the-loop" or "human-on-the-loop" approach [7], where AI augments human capabilities rather than replacing human decision-makers, especially in critical functions.

Table 2.1: Comparative Analysis of AI Applications in Foreign Ministries Globally

Country/Entity	Specific AI Application	Key Technologies Used	Reported Outcomes/Challenges	Source(s)
China (MFA)	Sentiment analysis of official statements (e.g., regarding Russo-Ukrainian war)	NLP, Sentiment Analysis	Identification of thematic features and sentiment shifts in diplomatic discourse. Subjectivity in manual labeling for training.	30
Global (Conceptual)	"Bilateral Navigator" - Analysis of relationships between all 193 UN member states	AI, ML, Data Analysis	Aims to democratize diplomatic analysis, provide data-driven insights. Potential for data bias, dependency on platform.	4
Various (General)	Decision support, drafting documents, trend analysis, negotiation support	NLP, ML	Enhanced efficiency, informed policy. Adoption varies, leading to inconsistent outcomes. Ethical	2

			concerns.	
Various (General)	Real-time social media analysis, crisis response guided by predictive analytics	NLP, Predictive Analytics	Improved situational awareness, faster crisis response. Data overload, potential for misinterpretatio n.	23
Various (General)	Real-time translation, sentiment analysis, policy modeling, media monitoring	NLP, ML	Enhanced communication, better understanding of public opinion. Requires AI-literate diplomats, ethical oversight.	5
Research (e.g., BBVA)	Geopolitical analysis, conflict monitoring (migration, wars) using media text	NLP, Big Data	Real-time insights, conflict forecasting. Data quality from media, complexity of geopolitical factors.	20
OECD Countries	Generative AI (LLMs) for anti-corruption and integrity efforts (e.g., analyzing documents)	LLMs, Generative AI	Enhanced operational efficiency, analysis of unstructured data. Data security, model interpretability.	31

2.3 AI in Modern Diplomacy

2.3.1 Transforming Diplomatic Functions

Artificial Intelligence is fundamentally reshaping various diplomatic functions, offering tools to navigate the complexities of modern international relations. One key area is **decision support**, where AI's ability to analyze large and diverse datasets helps diplomats identify emerging trends, predict future developments, and formulate more informed policy decisions.[2] By **streamlining administrative tasks**, AI can automate routine processes, thereby freeing up diplomatic personnel to concentrate on strategic thinking, negotiation, and relationship-building.[2]

In **communication and negotiation support**, AI offers capabilities such as real-time translation during multilingual meetings, assistance in drafting diplomatic communiques, simulation of negotiation dialogues to explore potential outcomes, and sentiment analysis of communications to gauge reactions or intentions.[2] For **crisis management**, AI facilitates real-time information gathering and analysis from myriad sources, enabling swifter and more coordinated actions in response to natural disasters, political unrest, or other emergencies.[2]

Public diplomacy is another domain significantly impacted by AI. These technologies allow for the analysis of global public opinion, monitoring of international media coverage, and more targeted engagement with diverse audiences worldwide.[5] AI can help diplomats understand how their country and its policies are perceived, identify key influencers, and detect misinformation or disinformation campaigns. In the realm of **conflict resolution**, AI can contribute by identifying patterns in historical conflicts, enhancing communication channels between conflicting parties through tools like automated translation or clarification, and even predicting the potential outcomes of different resolution strategies based on historical data.[2] Tools like the "Bilateral Navigator" aim to provide a "total diplomatic analysis" by synthesizing vast datasets into actionable insights on bilateral relations.[4]

While AI offers these powerful augmentations, its effective integration into diplomacy requires a strategic approach. For developing countries, in particular, AI can offer cost-effective tools and remote collaboration platforms, but this potential can only be realized if diplomats are adequately trained to become "AI-literate".[5] This literacy involves understanding not just how to use AI tools, but also their inherent strengths, limitations, ethical implications, and how to critically evaluate their outputs. The mere availability of technology is insufficient; human capacity building is paramount.

2.3.2 Case Studies of AI in Foreign Ministries Worldwide

While comprehensive, publicly documented case studies of AI implementation specifically within Foreign Ministries are still emerging, several examples and related applications illustrate the trend. The Ministry of Foreign Affairs of China, for instance,

has reportedly utilized NLP techniques to analyze its official statements regarding the Russo-Ukrainian war, employing sentiment analysis to track thematic shifts and emotional tones in its diplomatic discourse.[30] This demonstrates a direct application of AI for understanding and potentially shaping diplomatic narratives.

The conceptual "Bilateral Navigator" project, which aims to analyze the complex web of relationships between all 193 UN member states using AI, serves as a model for data-driven diplomatic analysis on a global scale.[4] Although not an MFA initiative itself, research entities like BBVA Research utilize NLP and big data analytics to monitor geopolitical events, analyze international relations (e.g., migration flows, the Russia-Ukraine war, Israel-Hamas conflict), and generate geopolitical risk indices from global media feeds.[20] These applications, along with systems like ICEWS (Integrated Crisis Early Warning System) and POLECAT (Political Events, Attributes and Types Classification System), offer blueprints for how MFAs could leverage similar technologies for early warning, crisis monitoring, and policy analysis.[20]

In a broader governmental context, integrity actors in OECD countries, including anti-corruption agencies, are exploring the use of generative AI and LLMs to enhance internal operations, particularly in operational efficiency and the analysis of unstructured data.[31] Such applications could have parallels for MFAs in areas like internal knowledge management or policy document analysis.

However, the adoption of AI in diplomatic practices is not uniform across countries, leading to potentially inconsistent outcomes and varying levels of sophistication.[2] The sensitivity of diplomatic discussions and the high stakes involved mean that "black box" AI solutions, where the decision-making process is opaque, are unlikely to be trusted or effective for core diplomatic functions.[2] Concerns persist about replacing human roles with automated decision-making, underscoring the necessity for AI systems in diplomacy to be explainable, transparent, and subject to robust human oversight.[2] Diplomats are unlikely to cede critical judgment or sensitive analysis to AI systems they cannot understand or scrutinize. Therefore, successful AI integration in MFAs will likely prioritize AI as a decision-support tool that complements, rather than supplants, human expertise and judgment.[5]

2.4 The Indonesian Context: AI National Strategy and Public Sector Digitalization

2.4.1 Indonesia's National AI Strategy (Stranas KA) and Policy Landscape

Indonesia formally embarked on its AI journey with the launch of the National Strategy for Artificial Intelligence (Stranas KA) 2020-2045, a comprehensive roadmap developed through multi-stakeholder consultations involving government, industry,

academia, and civil society.[7] This strategy outlines a long-term vision for AI development, focusing on five key pillars: 1) AI research and industrial innovation, 2) talent development, 3. Ethics and policy, 4. Infrastructure and data, and 5. Priority application areas.[29] The priority sectors identified include healthcare, bureaucratic reform, education and research, food security, and mobility and smart cities.[29] The "bureaucratic reform" pillar is of direct relevance to enhancing the efficiency and effectiveness of government bodies like Kemlu RI.

The Indonesian government aims to position the nation as a regional leader in AI, fostering indigenous AI development and leveraging the technology to achieve its "Golden Indonesia 2045" vision of becoming a leading digital economy.[8] To support this, key legal frameworks have been introduced or are under development, covering areas such as personal data protection (Law No. 27 of 2022), electronic information and transactions (Law No. 11 of 2008 as amended by Law No. 19 of 2016), and specific AI ethics guidelines, notably the Minister of Communication and Informatics Circular Letter No. 9 of 2023 concerning the Ethics of Artificial Intelligence.[7] This circular outlines ethical values such as inclusivity, humanity, security, democracy, transparency, credibility and accountability, personal data protection, environmental sustainability, and intellectual property rights.

Indonesia is pursuing a balanced regulatory approach, seeking to create policies that are structured yet adaptable, ensuring ethical AI development while allowing for innovation and investment growth.[7] There are plans to establish a National Agency for Artificial Intelligence to coordinate policies and set standards, and a National Data and Artificial Intelligence Ethics Council to oversee the responsible use of AI.[7] Significant emphasis is placed on talent development, with initiatives like the Digital Talent Scholarship (DTS) program aiming to train hundreds of thousands of professionals in AI, cybersecurity, and data analytics to address the substantial digital talent gap.[8]

Table 2.2: Key Pillars of Indonesia's National AI Strategy (Stranas KA) and Relevance to Kemlu RI

Stranas KA Pillar (2020-2045)	Key Objectives of Pillar (Illustrative)	Specific Relevance/Implication for Kemlu RI's AI Adoption	Source(s)
1. AI Research & Industrial Innovation	Foster AI research, support AI startups,	Kemlu RI could partner with local	[7]

	promote AI adoption in key industries.	research institutions or AI startups for developing tailored diplomatic AI solutions. Potential for innovative public diplomacy tools or consular service enhancements.	
2. Talent Development	Develop a skilled AI workforce through education, training (e.g., DTS program), and certification. Address the digital talent gap.	Critical for Kemlu RI to upskill its diplomats and staff in AI literacy and data analysis. Could leverage national training programs or develop specialized modules for diplomatic applications.	[7]
3. Ethics and Policy	Establish ethical guidelines (e.g., Circular No. 9/2023), data governance frameworks, ensure AI aligns with Pancasila values, human rights.	Kemlu RI must ensure its AI implementations strictly adhere to national ethical guidelines, particularly concerning data privacy, bias, transparency, and human oversight in sensitive diplomatic contexts.	[7]
4. Infrastructure and Data	Develop robust digital infrastructure, data centers, promote data sharing and interoperability.	Kemlu RI requires secure and reliable data infrastructure for AI applications. Needs clear data management policies for diplomatic information. Access to relevant,	[7]

		high-quality data is crucial for AI model performance.	
5. Priority Application Areas (e.g., Bureaucratic Reform)	Utilize AI to improve public service delivery, enhance government efficiency, and support evidence-based policymaking.	Directly applicable to Kemlu RI for streamlining administrative processes, improving consular services, enhancing public diplomacy analysis, and supporting foreign policy decision-making with data-driven insights.	[7]

2.4.2 Current State of AI Adoption in the Indonesian Public Sector

Despite the ambitious national strategy, the current state of AI adoption in Indonesia's public sector reveals a significant journey ahead. Indonesia's ranking in global AI indices, such as the Government AI Readiness Index (38th out of 181 nations in 2024) and the Global AI Index (49th out of 83 countries in 2024), indicates that it trails behind regional peers like Singapore and Malaysia.[13] The country is also notably absent from the top-50 nations in AI research output, patents, and investment, reflecting insufficient investment in R&D and digital infrastructure.[13]

Several formidable challenges hinder widespread AI adoption. A critical issue is the lack of adequate digital infrastructure, particularly reliable high-speed internet access in rural and remote areas, which is essential for AI systems requiring real-time data processing.[13] There is a severe shortage of skilled AI professionals, including data scientists, AI engineers, and researchers, limiting the capacity to develop, implement, and manage AI solutions effectively.[13] While policies like "Making Indonesia 4.0" and Stranas KA exist, a perceived weakness in clear and consistently enforced policies to guide AI development and ensure ethical use in practice remains a concern.[13] Data fragmentation, where public sector data is often siloed, inaccessible, or of poor quality, makes it difficult to train and deploy AI systems that rely on large, integrated datasets.[13] Furthermore, building public trust and addressing ethical concerns related to AI misuse are crucial for broader acceptance and successful implementation.[13]

Nevertheless, there are glimpses of progress. The National Disaster Management Agency (BNPB) has employed AI for data analytics to predict natural disasters like

floods and landslides, providing early warnings.[13] During the COVID-19 pandemic, AI-driven platforms were utilized for tracking virus spread, optimizing vaccine distribution, and monitoring public compliance with health protocols.[13] The government has also expressed intentions to integrate services across various sectors using AI and superapps.[15] However, critiques have been raised regarding a tendency towards "techno-solutionism," an over-reliance on technological fixes without adequately addressing the underlying social, institutional, and contextual factors that shape how these tools are designed, implemented, and used.[15] Systemic issues like rigid budgetary policies and fragmented procurement processes further complicate agile and adaptive digital transformation efforts in the public sector.[15] This suggests a potential disconnect between Indonesia's ambitious national AI goals and the on-the-ground realities of public sector AI adoption, implying that the AI journey for ministries like Kemlu RI will likely be incremental and heavily dependent on first addressing foundational digital literacy, infrastructure, and governance.

2.4.3 Digital Transformation Initiatives within the Indonesian Ministry of Foreign Affairs (Kemlu RI)

Kemlu RI is an active participant in the Indonesian government's broader digital transformation agenda, which emphasizes inter-ministerial collaboration to create a more adaptive, efficient, and citizen-centric public service.[32] The Ministry has been leveraging Information and Communication Technology (ICT) for several years to enhance its public communication, service delivery, and diplomatic functions. This includes the use of official websites and active engagement on social media platforms like Instagram to disseminate information and engage with the public.[11]

Specific digital initiatives by Kemlu RI demonstrate a commitment to modernization. The "SafeTravel" mobile application was launched to provide Indonesian citizens traveling abroad with safety information, travel advisories, and emergency assistance features, serving as a tool for citizen protection and awareness campaigns.[11] Similarly, the "Peduli WNI" (Care for Indonesian Citizens) web portal offers a range of online services, including self-reporting for citizens overseas, applications for consular services (such as legalizations and passport renewals), and a mechanism for submitting complaints or inquiries.[11] These platforms represent an effort to digitalize data and document reporting related to Indonesian citizens abroad, aiming for better service provision and protection.

Digital diplomacy is increasingly recognized as a vital tool for Kemlu RI in managing Indonesia's international image and protecting its citizens globally.[11] The Ministry's various public diplomacy programs, such as the Bali Democracy Forum [34], the

Indonesian Arts and Culture Scholarship (IACS) [36], and the Darmasiswa RI Scholarship Program [37], all involve significant information dissemination and international engagement components that are, or could be, enhanced by digital technologies and data analysis. Kemlu RI's own Foreign Policy Journal touches upon the analysis of diplomatic efforts and economic diplomacy, implying an internal need for robust information analysis capabilities.[9]

Despite these advancements, there is an acknowledged need for Kemlu RI to further refine its digital diplomacy strategy, including clearer definitions of target audiences, desired outcomes, and measurable goals for its digital initiatives.[33] The existing digital platforms like SafeTravel and Peduli WNI, while valuable, also represent potential "low-hanging fruit" for AI enhancements. The data generated by these platforms could be used to train AI models for applications such as AI-powered chatbots for consular inquiries, predictive analytics to anticipate citizen assistance needs during crises, or to identify emerging issues faced by Indonesian citizens abroad. Such augmentations could significantly improve the efficiency and responsiveness of these services. However, the successful implementation of more advanced AI will require Kemlu RI to address the broader challenges of digital literacy within its workforce and ensure that its data infrastructure and governance are prepared for AI-driven processes. The strong emphasis in Indonesia's AI ethics on Pancasila values [7] and "humanity" [28] also means that any AI applications in Kemlu RI, particularly those interacting with the public or influencing foreign policy, will face high scrutiny regarding fairness, non-discrimination, and alignment with national values.

2.5 Ethical Frameworks and Governance for AI in the Public Sector

2.5.1 Global Ethical Principles for AI

As AI becomes more pervasive, a global consensus is emerging around core ethical principles that should guide its development and deployment. These commonly cited principles include transparency (making AI decision-making processes understandable), justice and fairness (ensuring equitable outcomes and avoiding bias), non-maleficence (doing no harm), responsibility (assigning accountability for AI systems and their impacts), privacy (protecting personal data), beneficence (ensuring AI benefits humanity), accountability (mechanisms to address harm or errors), and human oversight (maintaining human control over AI systems).[2] The establishment of robust ethical AI frameworks is considered essential to ensure that technological advancements align with societal values and adequately protect users from potential harm.[8] Key challenges in upholding these principles include mitigating algorithmic bias, ensuring data security and privacy, combating AI-driven misinformation and disinformation, and establishing clear lines of accountability.[2] In the context of

diplomacy, AI is viewed as a powerful complement to human insight, but its use must be guided by experience, cultural sensitivity, and strong ethical oversight.[5]

2.5.2 Indonesia's AI Ethics Guidelines and Regulatory Approach

Indonesia has proactively developed its own ethical guidelines and regulatory approach for AI, anchored in its national values and strategic priorities. The National Strategy for AI (Stranas KA) 2020-2045 places a strong emphasis on ethics and policy as one of its core pillars.[7] The ethical values articulated within Stranas KA are deeply rooted in Pancasila, Indonesia's foundational philosophy, and include a focus on the benefit of humanity, reliability, security, openness, accountability, synergy among stakeholders, and the application of principles from existing national laws such as Law No. 11 of 2019 concerning the National System of Science and Technology.[7] A critical component of these guidelines is the emphasis on human oversight, with specific mechanisms like Human-in-the-loop (HITL), Human-on-the-loop (HOTL), and Human-in-command (HIC) being advocated to ensure human control at various stages of AI system operation and decision-making.[7]

Building on Stranas KA, the Minister of Communication and Informatics issued Circular Letter No. 9 of 2023 concerning the Ethics of Artificial Intelligence.[7] This circular further elaborates on ethical values that must be considered in AI development and implementation, such as inclusivity, humanity, security, democracy, transparency, credibility and accountability, personal data protection, environmental development and sustainability, and intellectual property rights.[28] The government also plans to establish a National Data and Artificial Intelligence Ethics Council to provide ongoing oversight.[29] Indonesia is pursuing a balanced regulatory approach, aiming to combine horizontal (cross-sectoral) and vertical (sector-specific) strategies to create AI policies that are structured enough to ensure ethical development yet adaptable enough to allow for innovation and investment growth.[8] This multi-layered approach, while comprehensive, presents the challenge of operationalizing these high-level principles into concrete, actionable procedures at the ministerial level, such as within Kemlu RI. For instance, translating the value of "Pancasila" into specific design choices for an NLP-based sentiment analyzer requires careful consideration and practical interpretation.

2.5.3 ASEAN AI Governance Framework

Recognizing the regional importance of AI, the Association of Southeast Asian Nations (ASEAN) has also taken steps to promote responsible AI governance. In February 2024, ASEAN released the "ASEAN Guide on AI Governance and Ethics," which was subsequently supplemented by an "Expanded Guide" in February 2025, with a

particular focus on generative AI.[27] This guide aims to bridge the regional gap in intergovernmental AI governance standards and offers practical guidance for organizations across ASEAN member states to responsibly design, develop, and implement AI technologies.[27] Indonesia actively collaborates with other ASEAN jurisdictions on these AI governance initiatives.[29]

The ASEAN Guide emphasizes the development and deployment of AI that is safe, trustworthy, and ethical.[27] It outlines criteria for "Safe AI," including system robustness and reliability, accountability mechanisms with clearly defined roles and responsibilities, rigorous testing and risk assessment, protection against cybersecurity threats, and compliance with legal and regulatory requirements such as data protection.[27] For "Ethical AI," the criteria include designing and training systems on diverse local datasets to mitigate bias, ensuring fairness and inclusivity, promoting sustainability (including addressing the carbon footprint of AI itself), and empowering communities, including indigenous peoples, through public-private-people partnerships.[27] The strong emphasis on "human oversight" within Indonesia's national AI ethics [7] aligns well with global and regional concerns, and is particularly critical for AI applications in diplomacy, where misinterpretations or automated errors can have severe geopolitical consequences. This necessitates designing AI systems primarily as decision-support tools that augment human judgment, rather than as autonomous agents making critical decisions independently.

2.6 Identifying Research Gaps and Opportunities for the Indonesian MFA

The literature review reveals several research gaps and corresponding opportunities for the application of AI within the Indonesian Ministry of Foreign Affairs. Firstly, there is limited publicly documented research specifically focusing on AI applications tailored to the unique operational needs, linguistic context (Bahasa Indonesia), and strategic objectives of Kemlu RI. While general principles of AI in diplomacy exist, their specific translation into the Indonesian context remains underexplored.

Secondly, there is a lack of detailed, actionable frameworks for AI adoption within Kemlu RI that holistically integrate Indonesia's national AI strategy, its specific ethical guidelines (including those based on Pancasila), state-of-the-art AI technologies, and practical implementation steps encompassing crucial aspects like personnel training and performance metrics. The current digital diplomacy efforts of Kemlu RI [33], while commendable, also indicate a need for clearer strategies and measurable goals, which AI could help define and achieve.

These gaps present significant opportunities. There is an opportunity to propose a focused AI project that is both impactful and feasible for an MSIT thesis, serving as a

pilot or proof-of-concept for Kemlu RI. An example, which will be elaborated in Chapter 3, is the development of an NLP-based system for public diplomacy analysis using Bahasa Indonesia media content.[10] Such a project would directly address the challenge of leveraging Bahasa Indonesia in AI [7] and support Kemlu RI's public diplomacy objectives.

Further opportunities lie in developing tailored guidelines for training Kemlu RI personnel in the effective and ethical use of AI tools, moving beyond basic operational skills to include critical evaluation of AI outputs. Defining relevant and measurable performance metrics for AI systems within a diplomatic context is another area ripe for research, ensuring that AI investments deliver tangible value. Addressing these gaps can contribute significantly to Kemlu RI's modernization efforts and Indonesia's broader digital transformation agenda.

Chapter 3: Proposed AI-Driven Solution for the Indonesian Ministry of Foreign Affairs: AI-Enhanced Public Diplomacy Monitoring and Analysis

This chapter details a specific, feasible project for an MSIT thesis: an "AI-Enhanced Public Diplomacy Monitoring and Analysis" system, leveraging Natural Language Processing (NLP) for Bahasa Indonesia media. This focus aligns with identified needs of Kemlu RI, addresses existing research gaps, and leverages available AI techniques and resources.

3.1 Project Focus: AI-Enhanced Public Diplomacy Monitoring and Analysis

The rationale for selecting AI-enhanced public diplomacy monitoring and analysis as the project focus stems from several converging factors. Firstly, it directly addresses Kemlu RI's acknowledged need for effective public diplomacy, image management, and understanding of international and domestic perceptions related to Indonesia's foreign policy.[11] Secondly, it leverages NLP, a key AI technology with increasingly sophisticated applications in analyzing textual and media content, which is central to public diplomacy.[10] Thirdly, by specifically focusing on Bahasa Indonesia, the project tackles the challenge of underrepresentation of this language in global AI datasets and contributes to developing localized AI capabilities.[7]

The scope of developing a conceptual model, evaluating appropriate tools, and providing a detailed implementation proposal (potentially including a small-scale prototype for a core function) is considered feasible within the timeframe of an MSIT thesis. Such a system offers the potential to provide Kemlu RI with actionable insights

derived from the analysis of local and international media sentiment and narratives concerning Indonesia's foreign policy actions and global image.[10]

The specific objectives of this proposed AI solution are:

- To automate the collection and analysis of relevant news articles, social media posts, and other online content (primarily in Bahasa Indonesia, with English as a secondary focus for international perspectives) pertaining to Kemlu RI, Indonesian foreign policy, and key diplomatic issues.
- To perform sentiment analysis to gauge public and media opinion (positive, negative, neutral) on these issues and events, identifying shifts and trends over time.
- To apply topic modeling techniques to identify dominant and emerging narratives, key themes of discussion, and areas of public concern or interest.
- To utilize Named Entity Recognition (NER) to identify key actors, organizations, locations, and influencers mentioned in the discourse.
- To provide timely alerts and summarized reports to Kemlu RI's public diplomacy division, highlighting critical developments, significant shifts in sentiment, or potential disinformation campaigns.

3.2 Conceptual Framework of the Proposed AI Implementation

3.2.1 System Architecture Overview (High-Level)

The proposed AI-enhanced public diplomacy monitoring system would comprise several interconnected modules:

1. **Data Ingestion Module:** This module would be responsible for collecting raw data from various online sources. It would utilize Application Programming Interfaces (APIs) for accessing data from major news aggregators and social media platforms (e.g., Twitter/X, focusing on publicly available data). Custom web scrapers might be developed for specific Indonesian news websites or relevant blogs, adhering to ethical scraping practices and terms of service.
2. **Preprocessing Module:** Raw textual data requires significant cleaning before analysis. This module would perform tasks such as removing HTML tags, special characters, and irrelevant metadata. Language detection would be applied to segregate content. For Bahasa Indonesia texts, tokenization (breaking text into words or sub-word units) and stemming/lemmatization (reducing words to their root form, e.g., using libraries like Sastrawi [16]) would be crucial steps. Similar preprocessing would apply to English texts using standard libraries.
3. **NLP Analysis Module:** This is the core analytical engine of the system and would include:

- *Sentiment Analysis Engine:* This sub-module would classify the sentiment of texts as positive, negative, or neutral. Given the low-resource nature of Bahasa Indonesia, this might involve fine-tuning pre-trained multilingual models (like mBERT or XLM-R) on Indonesian-specific sentiment datasets, or developing hybrid approaches combining lexicon-based methods with machine learning classifiers.[30] Relevant Indonesian sentiment lexicons and datasets would be explored.[16]
- *Topic Modeling Engine:* Techniques such as Latent Dirichlet Allocation (LDA) or Non-negative Matrix Factorization (NMF) would be employed to automatically discover latent topics and themes within the collected corpus of documents. This helps in understanding what key issues are being discussed in relation to Indonesian foreign policy.
- *Named Entity Recognition (NER) Engine:* This sub-module would identify and categorize named entities such as persons, organizations (e.g., other MFAs, international bodies), locations, and potentially specific policy names or diplomatic initiatives.

4. **Reporting & Visualization Dashboard:** The insights generated by the NLP Analysis Module would be presented through an intuitive dashboard. This would include visualizations of sentiment trends over time, dominant topics, networks of key entities, and geographical mapping of discourse. The dashboard would allow users to filter data by source, time period, topic, or sentiment. It would also generate summarized reports and alerts for significant events or shifts in public opinion.
5. **Human-in-the-Loop (HITL) Interface:** Recognizing the importance of human oversight and the nuances of diplomatic language [7], this module would allow Kemlu RI analysts to review and validate AI-generated classifications (e.g., sentiment labels, topic assignments). It would also serve as a mechanism for analysts to annotate new data, provide corrective feedback to the models, and help in the continuous improvement and adaptation of the AI system.

The success of such a system heavily relies on the quality and representativeness of Bahasa Indonesia NLP resources [16] and the ability to continuously update the AI models to capture evolving language, new terminologies, and shifting narratives. This implies a need for a long-term strategy for ongoing data collection, annotation (potentially involving Kemlu RI staff or curated crowdsourcing), and model retraining. The initial MSIT thesis could focus on developing a foundational model and establishing the framework for this continuous improvement cycle. Furthermore, the system should be designed to *augment* human analysts within Kemlu RI's public diplomacy division, handling the large-scale data processing and initial analysis, while

human experts provide the critical interpretation, contextual understanding, and strategic decision-making, aligning with Indonesia's ethical emphasis on human oversight.[7]

3.2.2 Data Requirements, Sources, and Management

The effectiveness of the proposed AI system is critically dependent on the quality, relevance, and diversity of its input data.

- **Data Sources:**
  - *Indonesian Online News Portals:* Major national and regional news websites (e.g., Kompas, Tempo, The Jakarta Post, Detik.com, CNN Indonesia, BBC Indonesia) would be primary sources for formal media discourse.[38]
  - *International News Outlets:* Reputable international news agencies and publications that cover Indonesian foreign policy and regional affairs (e.g., Reuters, Associated Press, regional English-language newspapers).
  - *Social Media Platforms:* Publicly available data from platforms like Twitter/X, focusing on posts and discussions related to specific keywords, hashtags, or official Kemlu RI accounts. Facebook and Instagram public pages could also be considered, subject to API availability and terms of service.
  - *Official Kemlu RI Publications:* Press releases, official statements, speeches, and website content from Kemlu RI and Indonesian embassies/consulates worldwide would provide baseline information and context.
  - *Blogs and Forums:* Relevant Indonesian blogs or online forums discussing foreign policy or international relations, if identifiable and of sufficient quality.
- **Data Types:** The primary data type will be unstructured textual data, including news articles, social media posts, comments, official statements, and blog entries. Associated metadata (e.g., publication date, source, author, engagement metrics) will also be collected where available.
- **Language Focus:** The primary language for analysis will be Bahasa Indonesia. English will be the secondary language, particularly for international media coverage and some social media discourse.
- **Bahasa Indonesia NLP Considerations:**
  - *Resource Utilization:* The project will leverage existing Bahasa Indonesia NLP resources, including datasets for news and sentiment, pre-trained word embeddings, and tools for preprocessing tasks like stemming (e.g., Sastrawi) and tokenization.[16]
  - *Low-Resource Challenges:* Given that Bahasa Indonesia is considered a low-resource language in NLP terms [40], specific strategies will be needed. This may include:

        - Transfer learning from pre-trained multilingual models (e.g., mBERT, XLM-R) fine-tuned on available Indonesian datasets.
        - Exploring semi-supervised learning techniques to leverage unlabeled data.
        - Data augmentation techniques to expand smaller labeled datasets.
    - *Custom Lexicons:* Development of custom dictionaries or lexicons for Indonesian political terminology, diplomatic jargon, names of public figures, and potentially common slang or colloquialisms used in social media discussions related to foreign affairs.[17] This is crucial for accurate NER and sentiment analysis.
- **Data Storage:** A secure and scalable database solution (e.g., PostgreSQL, Elasticsearch) will be required to store the collected raw data, preprocessed text, and the outputs of the NLP analysis (sentiment scores, topics, entities).
- **Data Governance and Ethics:** All data collection, storage, and processing activities must strictly adhere to Indonesian data protection laws (e.g., Law No. 27 of 2022 concerning Personal Data Protection) and Kemlu RI's internal data security and privacy policies.[7] For social media data, collection will be limited to publicly available information, and efforts will be made to anonymize or aggregate data where appropriate to protect individual privacy. Ethical guidelines regarding bias, fairness, and transparency will be integral to the system's design and operation.

Table 3.1: Evaluation of Potential Bahasa Indonesia NLP Tools/Techniques for Public Diplomacy Analysis

Tool/Technique	Suitability for Bahasa Indonesia	Key Features	Pros	Cons/Limitations	Availability	Source(s)
Preprocessing Libraries						
Sastrawi	High (specifically for Bahasa Indonesia)	Stemmer, Stopword removal	Accurate stemming for formal Indonesian.	May struggle with informal language/slang.	Open Source	[16]

				Limited to PHP, but Python wrappers exist.		
NLTK, Spacy (with potential Indonesian models)	Moderate to High (general purpose, some Indonesian support)	Tokenization, POS tagging, NER, general text processing	Widely used, extensive documentation, large community.	Indonesian models might be less mature than for high-resource languages. Performance varies.	Open Source	[16]
Sentiment Analysis Approaches						
Lexicon-based (e.g., using InSet, Sentinoo-id)	Moderate (requires good quality Indonesian sentiment lexicons)	Uses pre-defined word sentiment scores	Simpler to implement, interpretable.	Struggles with context, negation, sarcasm. Lexicon coverage and quality are critical and may be limited.	Some lexicons open	[16] (implied)
Machine Learning (e.g., Naive Bayes, SVM, BERT)	High (can learn from data, BERT variants for multilingual/Indones	Classification based on trained models	Can capture complex patterns, potentially higher accuracy, adaptable.	Requires labeled training data (scarce for Indonesian),	Open Source (libraries)	[16]

	ian)			computationally intensive (BERT), risk of bias from data.		
Transfer Learning (e.g., fine-tuning mBERT, IndoBERT)	High (leverages knowledge from large pre-trained models)	Fine-tuning on smaller Indonesian-specific sentiment datasets	Good performance with limited labeled data, state-of-the-art for many NLP tasks.	Requires careful fine-tuning, still needs some labeled Indonesian data, computational resources for fine-tuning.	Open Source models	[40]
Topic Modeling						
LDA, NMF (via Gensim, Scikit-learn)	High (language agnostic at core, depends on preprocessing)	Unsupervised discovery of latent topics in text corpora	Identifies underlying themes without prior labeling.	Requires careful parameter tuning, topics can be hard to interpret, quality depends on preprocessing.	Open Source	[16]
Named Entity Recognition (NER)						

Spacy, Stanford NER (with Indonesian models)	Moderate to High (depends on model availability and quality)	Identifies persons, organizations, locations, etc.	Crucial for understanding actors and entities in discourse.	Performance for Indonesian NER may vary. Requires good quality training data or pre-trained models.	Some models open	[16] (implied)

3.3 Key Stakeholders within the MFA and Their Potential Roles

The successful development and adoption of the proposed AI system would require engagement and collaboration with various stakeholders within Kemlu RI:

- **Directorate General of Information and Public Diplomacy (Ditjen IDP):** As the primary intended user, this directorate general would be central to defining the system's requirements, providing domain expertise, validating the outputs, and ultimately utilizing the insights for shaping public diplomacy strategies and responses.
- **Directorate of Information and Media (within Ditjen IDP):** This directorate would provide crucial input on relevant media sources, assist in identifying key narratives and themes to monitor, and be a key consumer of the analytical reports.
- **Spokesperson's Office:** The system could provide the Spokesperson with real-time insights into public and media reactions to official statements or diplomatic events, aiding in crisis communication and messaging.
- **Center for Policy Analysis and Development (Pusat Pengkajian dan Pengembangan Kebijakan, P2K2 - or equivalent policy analysis units):** Insights from the AI system regarding public sentiment and media narratives could feed into broader foreign policy analysis and development processes.
- **IT Department/Division (Biro Perencanaan dan Organisasi - Bagian Data dan Informasi, or equivalent):** This unit would be essential for providing technical support, ensuring the system integrates with existing IT infrastructure, managing data storage, and overseeing cybersecurity aspects.
- **Human Resources/Training Division (Pusat Pendidikan dan Pelatihan, Pusdiklat):** This division would play a key role in developing and implementing training programs to build AI literacy and specific skills required to use and manage the AI system among Kemlu RI personnel.

- **Relevant Geographic Desks/Directorates:** Specific regional desks could utilize the system to monitor public and media discourse relevant to their areas of responsibility.

3.4 Alignment with Kemlu RI's Strategic Objectives and Indonesia's National AI Strategy

The proposed AI-enhanced public diplomacy monitoring and analysis system aligns well with both the strategic objectives of Kemlu RI and the broader goals of Indonesia's National AI Strategy (Stranas KA).

- **Supports Kemlu RI's Public Diplomacy Goals:** The system directly supports Kemlu RI's mandate to conduct effective public diplomacy, manage Indonesia's international image, and engage with foreign publics.[11] By providing data-driven insights into media narratives and public sentiment, it can help the Ministry craft more targeted and impactful communication strategies.
- **Contributes to Bureaucratic Reform:** Aligned with Stranas KA's priority area of "bureaucratic reform" [29], the AI system aims to introduce greater efficiency, data-driven decision-making, and modernization into Kemlu RI's public diplomacy operations, moving away from potentially more manual and time-consuming methods of media monitoring and analysis.
- **Fosters AI Talent Development:** The project, through its development and the subsequent need for trained users, contributes to the national goal of developing AI talent within the public sector, a key objective of Stranas KA and initiatives like the Digital Talent Scholarship program.[7]
- **Promotes Ethical AI Use:** The design and implementation of the system will explicitly incorporate Indonesia's national AI ethics guidelines, including those outlined in Ministerial Circular No. 9 of 2023 and the principles embedded in Stranas KA, such as transparency, accountability, fairness, and human oversight.[7]
- **Supports National Digital Transformation:** The initiative is in line with Indonesia's broader vision for digital transformation and its ambition to become a leading digital economy by 2045, with AI as a key enabler.[12]

By focusing on a practical application with clear benefits for a core diplomatic function, this project can serve as a valuable case study and catalyst for further AI adoption within Kemlu RI and potentially other Indonesian government agencies.

Chapter 4: Research Methodology for Thesis Development

This chapter outlines the research methodology that will be employed to develop the MSIT thesis, focusing on the proposed AI-Enhanced Public Diplomacy Monitoring and

Analysis system for Kemlu RI.

4.1 Research Design

A **Design Science Research (DSR)** methodology will be adopted for this MSIT thesis. DSR is well-suited for information technology research that aims to create and evaluate innovative IT artifacts to solve organizational problems or improve existing processes. In this context, the "artifact" will be the conceptual model, system architecture, and potentially a functional prototype of a core component of the AI-enhanced public diplomacy monitoring system.

The DSR process typically involves the following iterative phases:

1. **Problem Identification and Motivation:** This has been substantially addressed in Chapters 1 and 2 of this proposal, identifying the need for enhanced public diplomacy analysis within Kemlu RI and the potential of AI to address this.
2. **Definition of Objectives for a Solution:** Chapter 3 has outlined the specific objectives and conceptual framework of the proposed AI solution.
3. **Design and Development:** This will be a core activity of the thesis work, involving the detailed design of the system architecture, selection of appropriate NLP tools and techniques for Bahasa Indonesia, and potentially the development of a prototype for a key module (e.g., sentiment analysis or topic modeling for a sample dataset).
4. **Demonstration:** The developed artifact (conceptual model or prototype) will be demonstrated to illustrate its functionality and potential utility.
5. **Evaluation:** The artifact will be evaluated against the defined objectives and performance metrics (outlined in Section 4.5). This may involve technical testing, and if a prototype is developed, potentially simulated user feedback or expert review.
6. **Communication:** The research process, findings, and the artifact itself will be communicated through the final thesis document and defense.

This DSR approach allows for a rigorous yet practical investigation, combining theoretical understanding with the creation of a tangible solution relevant to Kemlu RI's context.

4.2 Data Collection Methods for the Thesis

The development of this thesis will rely on several data collection methods:

1. **Comprehensive Literature Review:** This ongoing process, substantially initiated for this proposal, will continue throughout the thesis work. It involves a systematic

review of academic journals, conference proceedings, books, government publications, and reports from international organizations. Key areas of focus include:
    - State-of-the-art AI technologies (NLP, ML, predictive analytics).
    - AI applications in public administration and diplomacy globally.
    - Indonesia's National AI Strategy, ethical guidelines, and public sector digitalization efforts.
    - NLP techniques, tools, and datasets specifically for Bahasa Indonesia.
    - Ethical frameworks and governance models for AI.
2. **Analysis of Secondary Data:** This involves the collection and analysis of publicly available documents relevant to Kemlu RI and Indonesian foreign policy. Sources include:
    - Official reports and publications from Kemlu RI.
    - Documents related to Stranas KA and other national digital transformation initiatives (e.g., from the Ministry of Communication and Informatics (Kominfo)).
    - White papers and reports from research institutions and think tanks focusing on AI in Southeast Asia or Indonesia.
3. **Dataset Collection for NLP (for the thesis work, if prototyping):**
    - To design, test, or prototype the NLP module of the proposed AI system, sample datasets of Bahasa Indonesia text will be required. This will involve:
        - Identifying and accessing publicly available news articles from Indonesian online media (e.g., Kompas, Tempo, Detik.com, as mentioned in sources like [38]).
        - Collecting publicly available social media posts (e.g., from Twitter/X) related to specific Indonesian foreign policy topics or Kemlu RI, using appropriate APIs and adhering to platform terms of service.
        - Exploring existing Bahasa Indonesia NLP datasets for sentiment analysis or general text corpora that can be leveraged for training or fine-tuning models.[16]
    - A small portion of this collected data may need to be manually annotated (e.g., for sentiment) to create a gold standard for evaluating the performance of NLP models, particularly given the low-resource nature of Bahasa Indonesia.
4. **Expert Consultation (Optional, contingent on feasibility and access during the thesis timeline):**
    - If opportunities arise and ethical approvals are obtained, informal consultations with NLP experts (particularly those familiar with Bahasa Indonesia) or practitioners in public diplomacy could provide valuable

feedback on the proposed solution's design, feasibility, and potential challenges. This proposal does not assume such access, but it remains a potential avenue for enriching the thesis research.

4.3 Data Analysis Plan for the Thesis

The data collected will be analyzed using a combination of qualitative and technical methods:

1. **Qualitative Analysis:**
    - **Thematic Analysis:** The literature review and secondary documents will be subjected to thematic analysis to identify recurring themes, key concepts, trends, challenges, best practices, and ethical considerations related to AI in diplomacy and the Indonesian context. This will help in refining the problem understanding and justifying the proposed solution.
    - **Content Analysis:** Official reports and policy documents (e.g., Stranas KA, Kemlu RI strategic plans) will be analyzed to understand strategic priorities and ensure the proposed AI solution aligns with them.
2. **Technical Analysis (for the design and potential prototyping of the AI solution):**
    - **Evaluation of NLP Tools and Libraries:** A systematic evaluation of existing Bahasa Indonesia NLP tools, libraries (e.g., Sastrawi, and those listed in [16]), and pre-trained models will be conducted to assess their suitability for the proposed tasks (sentiment analysis, topic modeling, NER). This will involve considering factors like accuracy, performance on Indonesian text, ease of use, scalability, and licensing.
    - **Assessment of Sentiment Analysis Techniques:** Different approaches to sentiment analysis for Bahasa Indonesia will be compared. This includes lexicon-based methods, traditional machine learning classifiers (e.g., Naive Bayes, SVM), and deep learning models (e.g., fine-tuning multilingual BERT variants like IndoBERT or mBERT). The challenges specific to low-resource languages, such as data scarcity and the need for domain adaptation, will be a key focus.[40]
    - **Conceptual Architecture Design:** Based on the analysis, a detailed conceptual architecture for the AI-enhanced public diplomacy monitoring system will be designed, specifying modules, data flows, and technology choices.
3. **Prototyping and Evaluation (if undertaken as part of the thesis):**
    - If a prototype of a core module is developed (e.g., a sentiment analysis classifier for Bahasa Indonesia news headlines), it will undergo:

- **Functional Testing:** To ensure the prototype performs its intended functions correctly.
- **Performance Evaluation:** Using standard NLP metrics (accuracy, precision, recall, F1-score) against a manually annotated test dataset.
- **Qualitative Evaluation:** Potentially through simulated user scenarios or peer review to gather feedback on usability and the relevance of the outputs.

4.4 Framework for Training and Capacity Building for MFA Personnel

The successful adoption and sustainable use of the proposed AI system within Kemlu RI will heavily depend on the AI literacy and skills of its personnel. Therefore, a comprehensive training and capacity-building framework is essential. This framework should be multi-level and cater to different user groups:

1. **Foundational AI Literacy (All Relevant Personnel):**
   - **Objective:** To provide a basic understanding of AI concepts, capabilities, limitations, and, crucially, the ethical implications relevant to diplomatic work.[5]
   - **Content:** Introduction to AI, ML, NLP; overview of AI applications in diplomacy; understanding data and algorithms; recognizing potential biases in AI; principles of ethical AI use (aligning with Indonesian [7] and ASEAN [27] guidelines); importance of human oversight.
   - **Delivery:** Workshops, online modules, seminars.
2. **Tool-Specific Training (Primary Users, e.g., Public Diplomacy Analysts):**
   - **Objective:** To equip users with the skills to effectively operate the proposed AI monitoring system, interpret its outputs, and contribute to its refinement.
   - **Content:** Detailed walkthrough of the system's dashboard and features; how to query the system and generate reports; understanding sentiment scores, topic models, and NER outputs; how to use the Human-in-the-Loop interface for data annotation and feedback; troubleshooting common issues.
   - **Delivery:** Hands-on training sessions, user manuals, ongoing support.
3. **Data Analysis and Interpretation Skills (Analysts, Policy Officers):**
   - **Objective:** To enhance the ability of staff to critically analyze AI-generated insights, integrate them with other sources of information and their own domain expertise, and translate them into actionable diplomatic strategies.
   - **Content:** Principles of data analysis; interpreting statistical outputs; identifying patterns and anomalies; understanding confidence levels and uncertainty in AI predictions; critical thinking skills to avoid over-reliance on AI and to identify potential model limitations or biases.[2]
   - **Delivery:** Specialized workshops, case study analyses.

4. **Technical Training (IT Staff, System Administrators):**
    - **Objective:** To enable technical staff to maintain, update, and potentially further develop the AI system.
    - **Content:** System architecture details; database management; model retraining procedures; cybersecurity protocols; integration with other MFA systems.
    - **Delivery:** Technical workshops, documentation.

Key Considerations for the Training Framework:

- **Continuous Learning:** AI is a rapidly evolving field. The training program should foster a culture of continuous learning and adaptation.
- **Leveraging National Initiatives:** Explore opportunities to collaborate with or adapt modules from national programs like the Digital Talent Scholarship (DTS) [8] to suit Kemlu RI's specific needs.
- **Ethical Reasoning:** A core component across all training levels must be ethical reasoning, ensuring that AI is used responsibly and in alignment with Indonesia's values and international commitments. This is vital to avoid the misapplication of AI insights in the sensitive domain of diplomacy.
- **Practical Application:** Training should be highly practical, using real-world or realistic case studies relevant to Indonesian diplomacy.

4.5 Proposed Performance Metrics for Evaluating the AI System's Efficacy and Impact

To assess the effectiveness and impact of the proposed AI-enhanced public diplomacy monitoring system, a combination of technical, operational, and impact-oriented metrics will be necessary. These metrics should be aligned with Kemlu RI's specific public diplomacy objectives.

Table 4.1: Proposed Performance Metrics for AI-Enhanced Public Diplomacy Monitoring System

Metric Category	Specific Metric	Definition/Calculation	Target/Benchmark (Illustrative)	Data Source for Metric
Technical Metrics				
	Sentiment	Standard	F1-score > 0.75	System logs,

	Analysis Accuracy/F1-score (for Bahasa Indonesia & English)	classification metrics (True Positives, False Positives, True Negatives, False Negatives) calculated against a manually annotated gold-standard dataset.	(initial); aim for continuous improvement.	annotated test datasets.
	Topic Modeling Coherence Score	Measures the interpretability and semantic coherence of identified topics (e.g., using NPMI).	Achieve consistently high coherence scores.	System outputs, human evaluation of topics.
	Named Entity Recognition (NER) Precision/Recall	Accuracy in identifying and classifying relevant entities (persons, organizations, locations).	Precision/Recall > 0.80 for key entity types.	System logs, annotated test datasets.
	Data Processing Speed	Time taken to ingest, preprocess, and analyze a defined volume of data (e.g., daily news batch).	Process daily intake within X hours.	System performance logs.
	System Uptime/Availability	Percentage of time the system is operational and accessible to users.	> 99.5% availability.	System monitoring tools.
Operational				

Metrics				
	Reduction in Manual Monitoring Time	Decrease in person-hours spent by Kemlu RI staff on manual media scanning and basic sentiment assessment.	Target 50% reduction in manual effort for initial screening.	User surveys, workload analysis (before/after implementation) .
	Increase in Volume of Information Processed	Number of articles, posts, or documents analyzed by the system per day/week, compared to previous manual capacity.	Process X times more data than manual methods.	System logs.
	Timeliness of Alerts and Reports	Time taken from event occurrence/publ ication to system alert generation or report availability.	Alerts for critical events within Y minutes/hours.	System logs, user feedback.
	User Adoption Rate	Percentage of targeted Kemlu RI staff actively using the system on a regular basis.	> 80% adoption among primary users within 6 months.	System usage logs, user surveys.
Impact Metrics				
	Improved Situational Awareness (Qualitative)	Perceived improvement by public diplomacy officers in their	Positive feedback from users.	User surveys, interviews, focus group discussions.

		understanding of media narratives and public sentiment.		
	Enhanced Ability to Detect/Respond to Narratives/Disinformation (Qualitative)	User-reported instances where the system helped identify or respond to emerging narratives or potential disinformation campaigns more effectively.	Documented cases of effective intervention/response.	User feedback, case study analysis of specific events.
	User Satisfaction Score	Overall satisfaction of Kemlu RI staff with the system's usability, relevance of insights, and contribution to their work.	Average satisfaction score > 4 out of 5.	User surveys (e.g., using Likert scales).
	Contribution to Public Diplomacy Campaign Effectiveness (Long-term, Qualitative)	Assessment of how insights from the AI system contributed to the planning, execution, and outcomes of specific public diplomacy campaigns.	Demonstrable links between AI insights and campaign success.	Campaign reports, post-campaign analysis, qualitative assessment by senior Kemlu RI officials.

It is important to note that for foreign policy and diplomatic applications, evaluating AI based solely on quantitative "correctness" can be limiting. As highlighted by the CFPD-Benchmark for LLMs in national security [24], understanding decision-making

tendencies and the nuanced impact on strategic thinking is also crucial. Therefore, qualitative assessments and user feedback will be vital components of the evaluation strategy.

4.6 Addressing Ethical Considerations in the Proposed Project

The development and deployment of the AI-enhanced public diplomacy monitoring system must be guided by a strong ethical framework, ensuring compliance with Indonesian laws and alignment with international best practices.

1. **Data Privacy:**
    - **Compliance:** Strict adherence to Indonesia's Personal Data Protection Law (Law No. 27 of 2022) and any specific Kemlu RI data privacy regulations is mandatory.[7]
    - **Public Data Focus:** Data collection will primarily target publicly available information from news media and social media platforms.
    - **Anonymization/Aggregation:** Where feasible and appropriate, especially with social media data, techniques for data anonymization or aggregation will be employed to protect individual identities before analysis.
    - **Purpose Limitation:** Data collected will be used solely for the stated public diplomacy monitoring and analysis objectives.
2. **Bias Mitigation:**
    - **Awareness and Auditing:** Acknowledge the potential for biases in training data, particularly for Bahasa Indonesia NLP models, which could reflect societal biases or underrepresent certain viewpoints. Regular auditing of models and datasets for bias will be planned.
    - **Diverse Data Sourcing:** Efforts will be made to source data from a diverse range of media outlets and public forums to capture a wider spectrum of opinions and reduce the risk of skewed analysis.
    - **Fair Representation:** The system design will aim to avoid unfairly targeting or misrepresenting specific individuals, groups, or viewpoints. The interpretation of sentiment and topics will require careful human validation to ensure fairness.
3. **Transparency and Explainability:**
    - **System Logic:** While deep learning models can be complex, efforts will be made to make the general logic of the AI system (e.g., how sentiment is broadly classified, how topics are generated) understandable to Kemlu RI users.
    - **Confidence Indicators:** The system should, where possible, provide confidence scores for its outputs (e.g., sentiment classifications, topic

assignments) to help users gauge reliability.
    - **Human Oversight:** The system will be designed with a "human-in-the-loop" approach [7], allowing analysts to review, validate, and if necessary, override or question AI-generated outputs. This aligns with Indonesia's emphasis on human control over AI.
4. **Accountability:**
    - **Defined Responsibilities:** Clear roles and responsibilities will need to be established within Kemlu RI regarding the use of the AI system, the interpretation of its outputs, and any decisions or actions taken based on those insights.
    - **Traceability:** System logs should allow for a degree of traceability in how analyses are performed, though full explainability of complex models remains a challenge.
5. **Alignment with Ethical Guidelines:**
    - The project will explicitly seek to align with the ethical principles outlined in Indonesia's National AI Strategy (Stranas KA), the Minister of Communication and Informatics Circular Letter No. 9 of 2023 [7], and the ASEAN Guide on AI Governance and Ethics.[27] This includes upholding values like humanity, inclusivity, security, democracy, and accountability.

A key ethical challenge for an AI-powered public diplomacy tool in Indonesia will be navigating the fine line between legitimate monitoring of public discourse for foreign policy insights and the potential for such a tool to be perceived as enabling domestic surveillance or infringing on freedom of expression, especially given Indonesia's democratic principles and commitment to human rights.[7] To mitigate this, the ethical framework for the proposed tool must clearly define the scope of data collection (e.g., focusing on publicly available data directly relevant to foreign policy issues and international perceptions of Indonesia), implement robust data anonymization where possible, and enforce transparent usage policies. Safeguards must be in place to prevent misuse of the system for purposes beyond its stated public diplomacy objectives.

Chapter 5: Expected Outcomes, Project Timeline, and Conclusion

5.1 Anticipated Contributions to Academic Knowledge and Practical Application within Kemlu RI

This MSIT thesis is anticipated to yield contributions to both academic knowledge and practical application within the Indonesian Ministry of Foreign Affairs.

- **Academic Contributions:**

    - The research will produce a validated conceptual model for an AI-driven public diplomacy analysis system tailored to the context of a developing country's foreign ministry.
    - It will offer insights into the specific challenges and potential solutions for applying Natural Language Processing (NLP) techniques to Bahasa Indonesia within the specialized domain of diplomatic discourse. This includes evaluating the suitability of existing tools and methods for a relatively low-resource language in a high-stakes application area.
    - The thesis will contribute to the broader understanding of how national AI strategies and ethical guidelines can be operationalized at the ministerial level.
- **Practical Contributions for Kemlu RI:**
    - The primary practical outcome will be a detailed proposal for an AI-enhanced system capable of improving the effectiveness of Kemlu RI's public diplomacy efforts. This includes potentially providing early warnings on emerging negative narratives, enhancing situational awareness regarding international and domestic perceptions of Indonesian foreign policy, and enabling more data-informed communication strategies.
    - Depending on the scope achieved within the thesis timeline, a pilot or prototype of a core system module (e.g., sentiment analysis for Bahasa Indonesia media) could be developed to demonstrate feasibility and provide a tangible starting point for Kemlu RI.
    - The research will offer a preliminary roadmap for training Kemlu RI personnel in AI literacy and the use of such analytical tools, as well as a framework for ethical implementation and governance of the AI system within the Ministry.

5.2 Detailed Timeline for the 6-Month Thesis Research Project

The successful completion of this MSIT thesis within a 6-month timeframe requires a structured and disciplined approach. The following timeline, presented in a Gantt chart format (descriptively here, to be visualized in the actual proposal as per [18]), outlines the key phases and activities:

Table 5.1: Gantt Chart for 6-Month Thesis Research Timeline

Task ID	Task Name	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
1.0	**Phase 1: Foundat**						

	ion & Literature Review Finalization						
1.1	Refine Research Questions & Objectives	[redacted]					
1.2	Complete In-depth Literature Review (Ch 2)	[redacted]	[redacted]				
1.3	Draft Chapter 1 (Introduction)	[redacted]					
1.4	Submit Draft Chapters 1 & 2 for Advisor Review		[redacted]				
2.0	**Phase 2: Solution Design & Methodology Develop**						

	ment						
2.1	Research Bahasa Indonesia NLP Tools & Datasets		[redacted]	[redacted]			
2.2	Design Conceptual Architecture for AI Solution (Ch 3)		[redacted]	[redacted]			
2.3	Develop Detailed Research Methodology (Ch 4)			[redacted]	[redacted]		
2.4	Refine Training & Performance Metric Frameworks (Ch 4)			[redacted]	[redacted]		
2.5	Submit Draft Chapters 3 & 4 for Advisor Review				[redacted]		

3.0	**Phase 3: Prototyping/Feasibility Analysis & Ethical Deep Dive**						
3.1	*If Prototyping:* Develop Basic Prototype of Core Module				[redacted]	[redacted]	
3.2	*If Conceptual:* Conduct Detailed Feasibility Analysis of Tools				[redacted]	[redacted]	
3.3	In-depth Analysis of Ethical Considerations & Mitigation				[redacted]	[redacted]	
4.0	**Phase 4: Results, Write-up &**						

	Revisions						
4.1	Analyze Results/ Findings from Design/Prototyping						
4.2	Draft Chapter 5 (Expected Outcomes, Timeline, Conclusion)						
4.3	Compile Full First Draft of Thesis						
4.4	Advisor Review of Full Draft						
4.5	Revisions and Finalization of Thesis						
4.6	Thesis Submission						

Key: ■ represents activity duration within the month.

This timeline is ambitious and requires consistent effort. Flexibility will be maintained to adapt to unforeseen challenges or emerging insights during the research process. Regular meetings with the thesis advisor will be crucial for guidance and progress monitoring.

5.3 Required Resources for Thesis Completion

The successful completion of this thesis will require access to the following resources:

- **Academic Resources:**
  - University library access to academic databases (e.g., IEEE Xplore, ACM Digital Library, Scopus, Web of Science) for scholarly articles and conference proceedings.
  - Access to relevant books and e-books on AI, NLP, diplomacy, and research methodologies.
- **Technical Resources:**
  - A personal computer with adequate processing power and internet access.
  - Software:
    - Python programming environment (e.g., Anaconda distribution).
    - Relevant Python libraries for NLP (e.g., NLTK, Spacy, Gensim, Scikit-learn, Transformers by Hugging Face, Sastrawi).
    - Potentially, access to cloud computing resources (e.g., Google Colab Pro, AWS, Azure) if significant model training or experimentation is undertaken for a prototype.
  - Access to publicly available Bahasa Indonesia datasets (news archives, social media APIs where permissible, existing NLP corpora).
- **Guidance and Support:**
  - Regular guidance and feedback from the MSIT thesis advisor.
  - Access to university writing centers or academic support services, if needed.

No specialized laboratory equipment or extensive travel is anticipated for this research, as it primarily involves literature review, conceptual design, and potential software-based prototyping using publicly available or open-source tools and data.

5.4 Concluding Remarks and Future Research Directions

This thesis proposal outlines a plan to investigate the application of Artificial Intelligence, specifically Natural Language Processing, to enhance public diplomacy monitoring and analysis within the Ministry of Foreign Affairs of the Republic of Indonesia. The research aims to develop a conceptual model for an AI-driven system tailored to the Indonesian context, considering the national AI strategy, ethical guidelines, and the specific challenges of working with Bahasa Indonesia. The

proposed solution has the potential to provide Kemlu RI with valuable tools for understanding media narratives, gauging public sentiment, and crafting more effective public diplomacy strategies in an increasingly complex global information environment.

A key takeaway from the preliminary research is the imperative for a phased, ethical, and human-centric approach to AI adoption within sensitive governmental functions like diplomacy.[14] While AI offers powerful capabilities, its successful integration depends on addressing foundational elements such as data governance, talent development, and robust ethical oversight, ensuring that technology serves to augment, not replace, human judgment and expertise.

Future Research Directions:

Upon completion of this thesis, several avenues for future research and development emerge:

1. **Full-Scale System Development and Deployment:** Moving beyond the conceptual model or prototype to develop and deploy a fully operational AI-enhanced public diplomacy monitoring system within Kemlu RI. This would involve more extensive software engineering, user interface design, and integration with existing MFA workflows.
2. **Expansion to Other Diplomatic Functions:** Investigating and proposing AI applications for other core diplomatic functions within Kemlu RI, such as AI-assisted negotiation support, consular service automation (e.g., advanced chatbots), predictive analytics for crisis management, or enhanced analysis of international law and treaties.
3. **Comparative Studies:** Conducting comparative studies on AI adoption strategies and impacts within other ASEAN Ministries of Foreign Affairs or foreign ministries of other developing countries. This could help identify shared challenges, best practices, and opportunities for regional collaboration in diplomatic AI.
4. **Long-Term Impact Assessment:** Undertaking a longitudinal study to assess the long-term impact of AI implementation on the effectiveness of Indonesian diplomacy, organizational culture within Kemlu RI, and the skills required of Indonesian diplomats.
5. **Advancement of Bahasa Indonesia NLP Resources:** Contributing to the development of more comprehensive and publicly available Bahasa Indonesia NLP datasets, pre-trained models, and tools specifically tailored for the public sector and diplomatic domains. This would benefit not only Kemlu RI but also other Indonesian government agencies and researchers.

6. **Exploring Explainable AI (XAI) for Diplomacy:** Researching and implementing XAI techniques to improve the transparency and interpretability of AI models used in diplomatic analysis, thereby fostering greater trust and understanding among users.

By addressing the research questions outlined in this proposal, this thesis aims to make a meaningful contribution to the strategic adoption of AI within the Indonesian Ministry of Foreign Affairs, ultimately supporting Indonesia's diplomatic objectives and its journey towards becoming a digitally advanced nation.

References

(A comprehensive list of all cited sources [1] would be compiled here, following a consistent academic citation style such as APA or IEEE, as required by the MSIT program.)

Appendices

(Example Appendices - Content to be developed during the thesis research)

Appendix A: List of Potential Bahasa Indonesia News Sources for Data Collection

(This appendix would list major Indonesian online news portals and media outlets identified as relevant sources for public diplomacy analysis.)

Appendix B: Overview of Selected Bahasa Indonesia NLP Tools/Libraries

(This appendix would provide a brief description of key features, strengths, and limitations of specific NLP tools and libraries considered or used for Bahasa Indonesia processing in the thesis, drawing from resources like.[16])

Appendix C: Draft Ethical Checklist for AI Implementation in Kemlu RI

(This appendix would propose a preliminary checklist based on Indonesian [7] and ASEAN [27] AI ethics guidelines, tailored for AI projects within Kemlu RI. It would cover aspects like data privacy, bias assessment, transparency, human oversight, and accountability.)

Works cited

1. Artificial intelligence in public administration: benefits and risks - Dialnet, accessed May 10, 2025, https://dialnet.unirioja.es/descarga/articulo/9953186.pdf

2. AI-Powered Diplomacy: The Role of ... - TRENDS Research & Advisory, accessed May 10, 2025, https://trendsresearch.org/insight/ai-powered-diplomacy-the-role-of-artificial-intelligence-in-global-conflict-resolution/
3. www.diplomacy.edu, accessed May 10, 2025, https://www.diplomacy.edu/topics/ai-and-diplomacy/#:~:text=AI%20as%20a%20tool%20for%20diplomacy,-AI%20is%20not&text=AI%20technologies%20are%20being%20leveraged,in%20formulating%20informed%20policy%20decisions.
4. (PDF) AI DIPLOMACY Insights and Innovations from the Bilateral ..., accessed May 10, 2025, https://www.researchgate.net/publication/390243157_AI_DIPLOMACY_Insights_and_Innovations_from_the_Bilateral_Navigator
5. AI's Transformative Impact On Diplomacy: A New Era Of Global Engagement – OpEd, accessed May 10, 2025, https://www.eurasiareview.com/30042025-ais-transformative-impact-on-diplomacy-a-new-era-of-global-engagement-oped/
6. The AI Diffusion Framework: Securing U.S. AI Leadership While Preempting Strategic Drift - CSIS, accessed May 10, 2025, https://www.csis.org/analysis/ai-diffusion-framework-securing-us-ai-leadership-while-preempting-strategic-drift
7. Indonesia | Global AI Ethics and Governance Observatory - UNESCO, accessed May 10, 2025, https://www.unesco.org/ethics-ai/en/indonesia
8. Indonesia's AI Strategy: Balancing AI Regulation and Innovation ..., accessed May 10, 2025, https://opengovasia.com/2025/02/26/indonesias-ai-strategy-balancing-ai-regulation-and-innovation/
9. jurnal - hubungan luar negeri - Portal Kemlu, accessed May 10, 2025, https://kemlu.go.id/files/repositori/56596/172775678566fb79f1e67da_JurnalHubluVol9No1JanuariJuni2024_001.pdf
10. Aspect-based Sentiment Analysis and Topic Modelling of International Media on Indonesia Tourism Sector Recovery - Lasigo Journals, accessed May 10, 2025, https://journal.lasigo.org/index.php/IJTL/article/download/502/219
11. e-journal.unair.ac.id, accessed May 10, 2025, https://e-journal.unair.ac.id/JHI/article/download/17996/10686/73865
12. Indonesia Digital Transformation - International Trade Administration, accessed May 10, 2025, https://www.trade.gov/market-intelligence/indonesia-digital-transformation
13. AI in public sector: A call for digital transformation – Faculty of ..., accessed May 10, 2025, https://fia.ui.ac.id/en/ai-in-public-sector-a-call-for-digital-transformation/
14. Integrating Artificial Intelligence into Public Administration: Challenges and Vulnerabilities, accessed May 10, 2025, https://www.mdpi.com/2076-3387/15/4/149
15. Navigating AI and superapp adoption in Indonesia's public sector - GovInsider, accessed May 10, 2025,

https://govinsider.asia/intl-en/article/navigating-ai-and-superapp-adoption-in-indonesias-public-sector
16. irfnrdh/Awesome-Indonesia-NLP: Resource NLP & Bahasa - GitHub, accessed May 10, 2025, https://github.com/irfnrdh/Awesome-Indonesia-NLP
17. ailabtelkom/id-NLP-resources: Kumpulan resource untuk pemrosesan bahasa alami Bahasa Indonesia. Segala bentuk kontribusi sangat "WELCOME" - GitHub, accessed May 10, 2025, https://github.com/ailabtelkom/id-NLP-resources
18. Format for a Thesis Proposal - Cal Poly Pomona, accessed May 10, 2025, https://www.cpp.edu/sci/computer-science/current-graduate-students/handbook/proposal-form.shtml
19. Master's Thesis Proposal Tips - University of Idaho, accessed May 10, 2025, https://www.uidaho.edu/cogs/resources/student-resources/thesis-dissertation/proposal-tips
20. www.defensa.gob.es, accessed May 10, 2025, https://www.defensa.gob.es/documents/2073105/2320762/analisis_de_la_geopolitica_mundial_mediante_inteligencia_artificial_ia_y_big_data_2025_dieeea01_eng.pdf
21. Political-LLM: Large Language Models in Political Science, accessed May 10, 2025, https://political-llm.org/
22. Artificial Intelligence in Diplomacy: Transforming Global Relations and Negotiations, accessed May 10, 2025, https://trendsresearch.org/insight/artificial-intelligence-in-diplomacy-transforming-global-relations-and-negotiations/
23. AI Use Cases for Diplomats: Applying Artificial Intelligence to Diplom - Routledge, accessed May 10, 2025, https://www.routledge.com/AI-Use-Cases-for-Diplomats-Applying-Artificial-Intelligence-to-Diplomacy/Kilburg/p/book/9781041008354
24. Scale AI & CSIS Introduce Foreign Policy Decision Benchmark, accessed May 10, 2025, https://scale.com/blog/scale-csis-foreign-policy-benchmark
25. AI DIPLOMACY: geo-politics, topics and tools in 2025 | Diplo, accessed May 10, 2025, https://www.diplomacy.edu/topics/ai-and-diplomacy/
26. The Latest on Southeast Asia: Indonesia joins BRICS - CSIS, accessed May 10, 2025, https://www.csis.org/blogs/latest-southeast-asia/latest-southeast-asia-indonesia-joins-brics
27. Advancing Safe, Trustworthy and Ethical AI for Climate Action - Arup, accessed May 10, 2025, https://www.arup.com/globalassets/downloads/insights/a/ai-for-sustainable-development-in-asean/ai-for-sustainable-development-in-asean.pdf
28. Transforming Government Decision-Making by Utilizing Artificial Intelligence (AI) in the Future - Open Journal Systems, accessed May 10, 2025, https://jurnal.iapa.or.id/proceedings/article/download/1206/583
29. Indonesia | Herbert Smith Freehills | Global law firm, accessed May 10, 2025, https://www.herbertsmithfreehills.com/insights/reports/searchlight-ai/indonesia
30. Full article: China's Discursive Strategic Neutrality Position in the ..., accessed May

10, 2025, https://www.tandfonline.com/doi/full/10.1080/10670564.2025.2479019?src=exp-la
31. Generative artificial intelligence for anti-corruption and integrity in government - Publications | OECD, accessed May 10, 2025, https://read.oecd.org/10.1787/657a185a-en
32. Indonesia: Key Ministry Collaboration Strengthens Digital Transformation - OpenGov Asia, accessed May 10, 2025, https://opengovasia.com/2025/02/06/indonesia-key-ministry-collaboration-strengthens-digital-transformation/
33. PENTINGNYA DIPLOMASI DIGITAL DALAM PENCAPAIAN ..., accessed May 10, 2025, https://pacis.unpar.ac.id/pentingnya-diplomasi-digital-dalam-pencapaian-kebijakan-luar-negeri/
34. diplomasi publik indonesia melalui bali democracy forum - ResearchGate, accessed May 10, 2025, https://www.researchgate.net/publication/356908555_DIPLOMASI_PUBLIK_INDONESIA_MELALUI_BALI_DEMOCRACY_FORUM
35. DIPLOMASI PUBLIK INDONESIA MELALUI BALI DEMOCRACY FORUM - Ejournal FISIP Unjani, accessed May 10, 2025, https://ejournal.fisip.unjani.ac.id/index.php/jurnal-dinamika-global/article/download/813/281
36. SIMPLE YET EFFECTIVE: RELATIONAL PUBLIC DIPLOMACY BY INDONESIAN ART CENTRES, accessed May 10, 2025, https://ijaps.usm.my/wp-content/uploads/2025/02/IJAPS-211_ART-5.pdf
37. THE IMPLEMENTATION OF DARMASISWA SCHOLARSHIP AS THE MEANS OF INDONESIA PUBLIC DILOMACY IN 2011 TO 2019 UNDERGRADUATE THESIS Writ, accessed May 10, 2025, https://dspace.uii.ac.id/bitstream/handle/123456789/49282/19323123.pdf?sequence=1&isAllowed=y
38. ANALISIS FRAMING: PEMBERITAAN MEDIA MASSA MENGENAI KEBIJAKAN LUAR NEGERI INDONESIA DALAM MENANGGAPI RIVALITAS AMERIKA SERIKAT DA, accessed May 10, 2025, https://ejournal.fisip.unjani.ac.id/index.php/jurnal-dinamika-global/article/download/1070/357
39. The meaning of sentiment analysis of UN speeches on ... - Frontiers, accessed May 10, 2025, https://www.frontiersin.org/articles/10.3389/fpos.2025.1546822/full
40. Mapping Sentiments: A Journey into Low-Resource Luxembourgish Analysis - ACL Anthology, accessed May 10, 2025, https://aclanthology.org/2024.luhme-1.3.pdf
41. Explainable Pre-Trained Language Models for Sentiment Analysis in Low-Resourced Languages - MDPI, accessed May 10, 2025, https://www.mdpi.com/2504-2289/8/11/160
42. Report of the Multi-year Expert Meeting on Trade, Services and Development on its eleventh session - UNCTAD, accessed May 10, 2025, https://unctad.org/system/files/official-document/c1mem4d33_en.pdf

43. COMPUTATIONAL ANALYSIS OF THE CHINESE GOVERNMENT'S USE OF ONLINE SOCIAL NETWORKS by Zhuo Cheng A dissertation submitted to the - Niner Commons, accessed May 10, 2025, https://ninercommons.charlotte.edu/record/2633/files/Cheng_uncc_0694D_13555.pdf
44. INTERWEAVING DIPLOMACY, DATA, AND TECHNOLOGY FOR SUSTAINABILITY: A CASE STUDY OF BARCELONA'S LOCAL GOVERNANCE - New Trends in Qualitative Research, accessed May 10, 2025, https://publi.ludomedia.org/index.php/ntqr/article/download/1041/1060/3701
45. Domestic Authority and Foreign Economic Policies in Chinese History - Harvard DASH, accessed May 10, 2025, https://dash.harvard.edu/server/api/core/bitstreams/6902fc31-f023-4ffd-981f-42826facd619/content
46. (PDF) The meaning of sentiment analysis of UN speeches on the Russia-Ukraine war: a comparative study using VADER and BERT NLP techniques - ResearchGate, accessed May 10, 2025, https://www.researchgate.net/publication/390506430_The_meaning_of_sentiment_analysis_of_UN_speeches_on_the_Russia-Ukraine_war_a_comparative_study_using_VADER_and_BERT_NLP_techniques
47. PAR: Political Actor Representation Learning with Social Context and Expert Knowledge | Request PDF - ResearchGate, accessed May 10, 2025, https://www.researchgate.net/publication/372928120_PAR_Political_Actor_Representation_Learning_with_Social_Context_and_Expert_Knowledge?_tp=eyJjb250ZXh0Ijp7InBhZ2UiOiJzY2llbnRpZmljQ29udHJpYnV0aW9ucyIsInByZXZpb3VzUGFnZSI6bnVsbH19
48. Gathering Language Data Using Experts Denis Peskov, 2021, accessed May 10, 2025, http://denis.ai/assets/media/PeskovThesis_CommitteVersion_12.1.21.pdf
49. Artificial Intelligence and Sustainability: - Innovations in Business and Managerial Practices - Research Highlights & Events, accessed May 10, 2025, https://research.sbs.edu/sbsrm/SBSRM01_Research%20Monography_01.pdf