

Harnessing Artificial Intelligence for Enhanced Public Diplomacy: A Sentiment and Narrative Analysis Framework for the Ministry of Foreign Affairs of the Republic of Indonesia

Chapter 1: Introduction

1.1. Background and Rationale

The contemporary diplomatic landscape is increasingly shaped by the rapid proliferation of digital technologies and the vast expanse of the global information environment. Ministries of Foreign Affairs (MFAs) worldwide are navigating this complex terrain, where public opinion, international image, and narrative control are pivotal to achieving foreign policy objectives.¹ Public diplomacy, the strategic engagement with foreign publics to foster understanding and influence, has consequently become more critical and more challenging. In this context, Artificial Intelligence (AI) emerges as a transformative force, offering novel capabilities to analyze information, understand public sentiment, and detect emerging narratives with unprecedented speed and scale.³

The Republic of Indonesia, with its dynamic foreign policy and significant global presence, stands to benefit substantially from the strategic integration of AI into its diplomatic practices. The Indonesian Ministry of Foreign Affairs (MoFA RI), also known as Kementerian Luar Negeri (Kemlu), is responsible for the nation's foreign politics and diplomacy.⁵ As Indonesia continues to assert its role in regional and international affairs, particularly within ASEAN and as a voice for the Global South, the ability to effectively understand and engage with global public opinion is paramount. MoFA RI has already embarked on a journey of digital transformation, including the establishment of dedicated units for public and digital diplomacy and the utilization of social media analytics tools.⁶ However, the sheer volume and complexity of digital information, particularly in multiple languages, present an ongoing challenge.

This thesis proposal outlines a research endeavor to develop an AI-powered framework specifically tailored for MoFA RI. The proposed system will leverage Natural Language Processing (NLP) techniques to perform sentiment analysis and narrative detection on publicly available data in Bahasa Indonesia and English. This will provide MoFA RI with actionable insights into how Indonesia and its foreign policies are perceived, the dominant narratives surrounding key issues, and emerging trends in global public discourse. Such a capability can significantly enhance the Ministry's ability to formulate proactive public

diplomacy strategies, manage its international image, and respond effectively to information challenges.

The rationale for this research is threefold. First, it addresses a practical need within MoFA RI for advanced analytical tools to navigate the complex information environment. Second, it aims to contribute to the State of the Art (SOTA) in AI for diplomacy by focusing on a low-resource language, Bahasa Indonesia, within a specific governmental context. Much of the current AI development is concentrated in high-resource languages and Western contexts; this research seeks to bridge that gap. Third, it underscores the importance of developing sovereign AI capabilities that are attuned to national interests and cultural nuances, particularly for nations in the Global South.

1.2. Problem Statement

MoFA RI, in its execution of Indonesian foreign policy and public diplomacy, faces the challenge of effectively monitoring, understanding, and responding to a vast and dynamic global information landscape. Manually processing and analyzing the sheer volume of online news, social media conversations, and other digital content to gauge public sentiment and identify influential narratives regarding Indonesia and its policies is a resource-intensive and often reactive endeavor. While MoFA RI has initiated digital diplomacy efforts ⁶, there is a need for more sophisticated, AI-driven tools that can provide continuous, in-depth, and proactive insights from multilingual data, particularly in Bahasa Indonesia and English.

The specific problems this research aims to address are:

1. The lack of an automated, scalable system for MoFA RI to comprehensively analyze public sentiment towards Indonesia and its foreign policy initiatives from diverse online sources.
2. The difficulty in systematically detecting, tracking, and understanding the nuances of dominant and emerging narratives related to Indonesia in the global digital sphere.
3. The challenges associated with processing and analyzing large volumes of text data in Bahasa Indonesia, a language often categorized as "low-resource" in NLP, for specialized diplomatic applications.
4. The need for a framework that not only provides analytical outputs but also offers actionable insights tailored to the strategic public diplomacy objectives of MoFA RI.

1.3. Research Questions

This research seeks to answer the following primary and secondary questions:

Primary Research Question:

How can an AI-powered framework, utilizing sentiment analysis and narrative detection for Bahasa Indonesia and English, be designed and prototyped to enhance the public diplomacy capabilities of the Ministry of Foreign Affairs of the Republic of Indonesia?

Secondary Research Questions:

1. What are the current public and digital diplomacy practices and information analysis needs within MoFA RI?
2. What are the SOTA AI applications, particularly NLP techniques, for sentiment analysis

and narrative detection relevant to public diplomacy, and how can they be adapted for MoFA RI's context?

3. What are the specific challenges and opportunities in developing NLP models for Bahasa Indonesia in the diplomatic domain, considering its status as a low-resource language?
4. What data sources are most relevant and accessible for analyzing public opinion and narratives concerning Indonesian foreign policy?
5. How can the outputs of the AI framework (sentiment trends, narrative maps, key influencers) be effectively visualized and integrated into MoFA RI's decision-making processes for public diplomacy?
6. What are the technical feasibility, potential contributions, and ethical implications of implementing such an AI framework within MoFA RI?

1.4. Research Objectives

The primary objective of this research is to design, develop a prototype of, and evaluate an AI-driven framework for sentiment analysis and narrative detection to support MoFA RI's public diplomacy efforts.

The specific objectives are:

1. To analyze MoFA RI's existing public diplomacy strategies, digital infrastructure, and information requirements.
2. To conduct a comprehensive review of AI applications in diplomacy, focusing on NLP techniques for sentiment analysis and narrative detection, and identify best practices and suitable models.
3. To investigate and address the challenges of applying NLP to Bahasa Indonesia in the diplomatic context, including data scarcity and linguistic nuances.
4. To curate and prepare a relevant dataset from public online sources (social media, news media) in Bahasa Indonesia and English for training and evaluating the AI models.
5. To develop and prototype core AI modules for:
 - Sentiment analysis of Bahasa Indonesia and English text related to Indonesian foreign policy.
 - Detection and tracking of key narratives and emerging trends in this text.
6. To design a conceptual dashboard for presenting actionable insights and visualizations to MoFA RI officials.
7. To assess the technical feasibility, potential benefits, and outline the ethical considerations and risks associated with the proposed AI framework.

1.5. Scope and Delimitations

The scope of this research is defined as follows:

- **Focus Area:** Application of AI (specifically NLP for sentiment analysis and narrative detection) for public diplomacy within the Ministry of Foreign Affairs of the Republic of Indonesia.
- **Languages:** Primarily Bahasa Indonesia and English. The system will aim to process and analyze text in these two languages.

- **Data Sources:** Publicly available online data, including social media platforms (e.g., Twitter/X, Facebook), online news media, and relevant blogs/forums. Proprietary or classified data is outside the scope.
- **AI Techniques:** The research will explore and adapt existing NLP models and techniques, including transformer-based models (e.g., IndoBERT, XLM-R), few-shot learning approaches, and topic modeling. The development of entirely new foundational AI algorithms is not the primary focus, but rather their novel application and adaptation.
- **Output:** The primary output will be a thesis detailing the research, a conceptual framework, and a functional prototype of the AI system demonstrating core capabilities. A fully deployed, operational system is beyond the scope of a PhD thesis but the research will provide a strong foundation for such development.
- **Ethical Considerations:** The research will address ethical issues related to data privacy, algorithmic bias, and responsible AI use in government.

Delimitations:

- The research will not delve into AI applications for other diplomatic functions like treaty negotiation or consular services, unless directly relevant to public diplomacy narratives.
- Analysis of visual or audio content is not within the primary scope, which focuses on text.
- The prototype will be a proof-of-concept and may not possess the full scalability or robustness of a commercial-grade system.
- The study will rely on the cooperation of MoFA RI for understanding requirements, but direct access to internal MoFA RI systems or confidential data is not assumed.

1.6. Significance and Contribution to SOTA

This research is significant for several reasons:

1. **Practical Utility for MoFA RI:** It offers a tangible solution to enhance Indonesia's public diplomacy effectiveness, enabling data-informed strategies and a more nuanced understanding of global perceptions.
2. **Advancement in AI for Diplomacy:** It contributes to the growing field of AI in international relations by providing a detailed case study of AI application within a specific MFA, particularly one from the Global South.
3. **Addressing Low-Resource NLP Challenges:** A key contribution lies in tackling the challenges of NLP for Bahasa Indonesia in a specialized, low-data domain. Developing effective models and potentially creating annotated datasets for Indonesian diplomatic text will be a valuable addition to NLP resources. This directly addresses a notable gap, as much AI research focuses on high-resource languages, potentially leaving nations like Indonesia reliant on systems not optimized for their specific linguistic and cultural contexts. This research aims to demonstrate a path towards developing more sovereign AI capabilities.
4. **Ethical Framework for Governmental AI:** The research will contribute to discussions on the ethical deployment of AI in public sector diplomacy, offering insights and potential guidelines.
5. **Model for Other Nations:** The framework and findings could serve as a model for other

developing countries seeking to leverage AI for their public diplomacy efforts, especially those with their own low-resource language challenges. This aligns with the broader goal of democratizing access to advanced AI tools and fostering digital sovereignty.

The SOTA contribution will be specifically in:

- The novel application and adaptation of advanced NLP techniques (e.g., fine-tuned transformers, few-shot learning, narrative analysis frameworks like FewTopNER) for sentiment and narrative analysis of Bahasa Indonesia diplomatic discourse.
- The creation of a methodology and potentially a unique annotated corpus for Indonesian diplomatic language, which is currently lacking.
- Providing empirical insights into the feasibility and impact of such an AI system in a real-world MFA setting in a major emerging economy.

1.7. Definition of Key Terminology

Term	Definition	Source(s)
Artificial Intelligence (AI)	The theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.	³
Public Diplomacy	Efforts by a state to understand, inform, and influence foreign publics in support of its national interests and foreign policy objectives. This includes communication with and engagement of individuals and non-governmental actors.	¹
Digital Diplomacy	The use of digital tools, particularly social media and other internet-based platforms, by states and diplomatic actors to achieve foreign policy goals, including public diplomacy.	⁶
Sentiment Analysis	An NLP technique used to determine the emotional tone	²

	(positive, negative, or neutral) expressed in a piece of text. It can also involve identifying specific emotions or opinions.	
Narrative Detection	The process of identifying, analyzing, and understanding the underlying stories, themes, and frames that shape public discourse and perception on specific issues or actors. This includes tracking how narratives evolve and spread.	²
Natural Language Processing (NLP)	A subfield of AI focused on enabling computers to process, understand, interpret, and generate human language in a valuable way.	⁹
Low-Resource Language	A language for which there are limited publicly available digital data (text corpora, annotated datasets) and NLP tools, hindering the development of advanced language technologies. Bahasa Indonesia is often considered in this category for specialized tasks.	¹²
Ministry of Foreign Affairs (MoFA RI / Kemlu)	The government ministry of the Republic of Indonesia responsible for the country's foreign politics and diplomacy.	⁵
Ditjen IDP (Directorate General of Information and Public Diplomacy)	A key directorate within MoFA RI responsible for carrying out Indonesia's public diplomacy and digital diplomacy initiatives.	⁶
BSKLN (Badan Strategi Kebijakan Luar Negeri)	The Foreign Policy Strategy Agency of MoFA RI, serving as a think tank for formulating and recommending foreign policy strategies.	¹⁵

1.8. Thesis Structure

This thesis will be organized into six chapters:

- **Chapter 1: Introduction:** Provides the background, problem statement, research questions, objectives, scope, significance, and key terminology.
- **Chapter 2: Literature Review:** Reviews existing literature on Indonesian foreign policy and public diplomacy, AI applications in diplomacy (with a focus on public diplomacy, sentiment analysis, and narrative detection), NLP advancements for Bahasa Indonesia, and ethical considerations for AI in government.
- **Chapter 3: Proposed AI Framework for MoFA RI's Public Diplomacy:** Details the conceptual framework, data acquisition and preparation strategies, the core AI engine for sentiment and narrative analysis, output visualization, and integration with MoFA RI's systems.
- **Chapter 4: Feasibility, Expected Contributions, and Limitations:** Discusses the technical feasibility, resource implications, expected contributions to MoFA RI and SOTA, and potential challenges, risks, and mitigation strategies.
- **Chapter 5: Preliminary Research Plan:** Outlines the phased research methodology, including requirements elicitation, model development, system prototyping, evaluation, and a tentative timeline.
- **Chapter 6: Conclusion and Future Directions:** Summarizes the research, discusses broader implications, and suggests avenues for future research and development.

Chapter 2: Literature Review

2.1. Indonesian Foreign Policy and Public Diplomacy Context

Indonesia's foreign policy is traditionally characterized by the principles of being "independent and active" (*bebas aktif*), aimed at serving the national interest while contributing to world peace and social justice.¹⁷ Key objectives include supporting national development (especially economic), preserving stability, and protecting territorial integrity.¹⁷ In the contemporary era, these objectives are pursued through active engagement in multilateral forums like ASEAN and the UN, and through robust bilateral relationships. Public diplomacy has become an increasingly recognized instrument in Indonesian foreign policy. The establishment of the Directorate General of Information and Public Diplomacy (Ditjen IDP) in 2002 marked a formal institutionalization of these efforts within MoFA RI.⁶ This directorate was tasked with improving Kemlu's performance and later became responsible for digital diplomacy initiatives.⁶ The Ministry's strategic plans have explicitly included digital diplomacy, for instance, in the 2015-2019 plan, reflecting an understanding of its utility in addressing complex issues and gathering global public feedback.⁶ Official statements from MoFA RI leadership, even in more recent contexts (though some provided information pertains to future dates like 2025), continue to emphasize priorities such as multilateralism, climate action, and countering separatist movements, all of which have significant public diplomacy dimensions.¹⁸

The evolution of MoFA RI's approach suggests a gradual maturation in its digital diplomacy capabilities. This journey began with foundational structures like the Ditjen IDP and the launch of its website and initial social media presence around 2009.⁶ A significant step was the formal recognition of "digital diplomacy" in a 2017 ministerial decree, which aimed to strategically employ digital media to advance Indonesia's interests.⁷ This progression indicates an organizational learning curve and an increasing acknowledgment of data-driven insights. The use of tools like Drone Emprit Academic (DEA) for analyzing specific events, such as the #BDF2019 Twitter campaign, demonstrates a practical application of social media analytics to understand public engagement, identify key influencers, and map social networks related to diplomatic initiatives.⁸ This prior experience with analytical tools signifies a certain level of receptiveness within the Ministry, suggesting that a more advanced AI system would be a logical next step, moving from event-specific analysis to continuous, sophisticated monitoring and insight generation.

Another key entity within MoFA RI relevant to strategic policy formulation is the Foreign Policy Strategy Agency (Badan Strategi Kebijakan Luar Negeri - BSKLN). BSKLN functions as the Ministry's "think tank," responsible for formulating, preparing, and providing recommendations on foreign policy strategies.¹⁵ This body plays a crucial role in the analytical underpinnings of Indonesian diplomacy and would be a key stakeholder and potential user of AI-driven insights for strategic foresight.

2.2. Overview of MoFA RI's Public and Digital Diplomacy Structures and Initiatives

To effectively tailor an AI framework, understanding MoFA RI's existing structures and digital initiatives is essential. The following table summarizes key entities and their relevance.

Table 2.2: Overview of MoFA RI's Public and Digital Diplomacy Structures and Initiatives

Unit/Initiative	Mandate/Function	Key Activities/Technologies Used	Relevance to AI Integration
Ministry of Foreign Affairs (MoFA RI / Kemlu)	Overall responsibility for Indonesia's foreign policy and diplomacy.	Policy formulation, international representation, consular services, public diplomacy.	Overarching beneficiary of improved public diplomacy insights. ⁵
Directorate General of Information and Public Diplomacy (Ditjen IDP)	Leading actor in Indonesia's public diplomacy; carries out digital diplomacy. Established in 2002.	Disseminating information, managing MoFA RI's social media (@KemluRI, etc.), cultural promotion, engaging foreign publics, utilizing film as a public diplomacy	Primary user of the proposed AI system for strategy formulation, campaign management, and evaluation. ⁶

		instrument.	
Foreign Policy Strategy Agency (BSKLN)	MoFA RI's "think tank"; formulates, prepares, and provides strategic policy recommendations.	Policy analysis, research, providing recommendations on foreign relations and policy.	Key user for strategic insights, trend analysis, and early warning capabilities derived from the AI system. ¹⁵
MoFA RI Official Website (kemlu.go.id)	Official portal for information dissemination. Launched around 2002.	Provides official information, press releases, policy statements.	Data source for official narratives; AI system can analyze how these narratives are received publicly. ⁶
MoFA RI Social Media Accounts (e.g., @KemluRI on Twitter/X, Facebook page)	Platforms for direct public engagement, information dissemination, and digital diplomacy. Launched around 2009.	Posting updates, engaging with users, running campaigns (e.g., #BDF2019).	Primary data source for public sentiment and narrative analysis; AI system can monitor these channels and broader conversations around them. ⁶
Use of Drone Emprit Academic (DEA) for #BDF2019 Analysis	Specific instance of using social media analytics tools for an event.	Analyzed Twitter conversations for #BDF2019, identifying top hashtags, influencers, social network structures, and engaged users.	Demonstrates existing capacity and interest in social media analytics; AI system can build upon and significantly expand these capabilities. ⁸

This existing infrastructure and the demonstrated willingness to adopt analytical tools like DEA ⁸ create a conducive environment for the introduction of a more sophisticated AI system. The proposed framework can enhance the capabilities of Ditjen IDP in executing targeted public diplomacy campaigns and provide BSKLN with deeper data-driven insights for strategic planning.

2.3. Artificial Intelligence Applications in Diplomacy and Foreign Policy

The integration of Artificial Intelligence into global diplomacy is rapidly transforming traditional practices, offering both significant opportunities and complex challenges.³ AI technologies equip governments with advanced tools to influence diplomatic decisions, understand international dynamics, and enhance the effectiveness of foreign policy implementation.² The potential of AI in international relations spans from diplomatic decision-making and economic forecasting to crisis management and public engagement.³ Several specific AI applications are particularly relevant to public diplomacy:

- **Gauging Global Public Opinion:** Generative AI models, such as ChatGPT, can be conceptualized as aggregators of global public opinion by processing vast amounts of

digital information from websites, social media, and blogs.¹ MFAs can query these models to understand common perceptions about a nation's image, policies, and international role.¹ This provides a quick way to assess how a country is generally viewed. However, a significant limitation is that these AI models are trained on existing online data, which can contain inherent biases, particularly reflecting stereotypes against Global South countries.¹ The outputs, therefore, need careful interpretation by diplomats.

- **Sentiment Analysis:** This NLP technique is crucial for understanding the emotional tone (positive, negative, or neutral) within public discourse, media coverage, and even diplomatic communications.² By analyzing sentiment, MFAs can gauge the public mood regarding specific policies or events, assess the reception of their messaging, and identify areas of concern or support.¹¹ For instance, analyzing sentiment in UN speeches can reveal underlying foreign policy positions and persuasive strategies.⁹
- **Narrative and Trend Detection/Prediction:** AI excels at identifying patterns and trends in large datasets. In diplomacy, this can involve analyzing geopolitical data, social media discussions, and news reports to anticipate potential conflicts or crises.² AI can help track how narratives evolve, identify key actors shaping these narratives, and detect misinformation or disinformation campaigns.¹¹ This early warning capability allows for more proactive diplomatic interventions.
- **Crisis Management:** AI tools can analyze real-time data from various sources during crises, such as conflicts or natural disasters, to help diplomats understand the situation, manage information flow, and coordinate responses more effectively.³
- **Information Analysis for Policy-Making:** MFAs produce and consume vast amounts of information, including reports, briefings, and analyses. AI can assist in processing this data to extract key insights, identify connections, and support evidence-based policy-making.¹ For example, in-house AI tools could analyze previous negotiation rounds to help formulate successful tactics.¹

The **benefits** of these AI applications are manifold, including enhanced decision-making through data-driven insights, improved operational efficiency, more targeted and effective public diplomacy messaging, early warning capabilities for crisis prevention, and potentially stronger negotiation strategies.²

However, the integration of AI in diplomacy is not without significant **risks and challenges**. A primary concern is **algorithmic bias**, where AI systems perpetuate or even amplify biases present in their training data, potentially leading to unfair or skewed policy recommendations.² This is particularly relevant when analyzing global public opinion, as AI models might reflect historical or systemic biases against certain regions or groups.¹ **Lack of transparency and explainability** in "black box" AI models can make it difficult to understand their decision-making processes, eroding trust and accountability.² **Data privacy** is another major concern, especially when analyzing public data from social media.²⁷ Furthermore, the potential for AI to be used for **manipulation**, such as creating deepfakes or spreading sophisticated misinformation, poses a threat to diplomatic trust and stability.² Issues of

accountability for AI-driven decisions and the critical need for **human oversight** to provide context and nuanced judgment are also paramount.² Over-reliance on technology could lead to the neglect of essential human diplomatic skills.

Several MFAs are already exploring these AI applications. Some are working on establishing in-house AI tools, while others are dedicating staff to map how AI can be leveraged to achieve foreign policy goals.²⁴ This indicates a growing recognition of AI's strategic importance in modern diplomacy.³⁰

The effective use of AI in diplomacy necessitates a careful balance. While AI can process data at a scale beyond human capability, it often lacks the nuanced understanding of cultural context, historical sensitivities, and the subtle art of diplomatic language that human diplomats possess.³ For instance, AI-generated texts, like speeches, can be perceived as formulaic and lacking emotional resonance.¹ The assertion that "the allure of AI is that it may facilitate data-informed policy making... Yet this entails a dangerous assumption: that the future will mirror the past" ¹ highlights the indispensable role of human interpretation and critical judgment. Therefore, AI systems in diplomacy should be designed as decision-support tools that augment human capabilities rather than replace them. A human-machine teaming approach, where AI provides analytical power and data-driven insights, and diplomats provide contextual understanding, strategic direction, and ethical oversight, is crucial for responsible and effective AI integration. This principle must be central to the design of any AI system for MoFA RI, ensuring that its outputs are explainable and that its users are trained to interpret and apply these insights critically.

Table 2.1: Comparative Overview of AI Applications in Public Diplomacy

AI Application	Description	Benefits for MFAs	Key Challenges	Illustrative Examples/Sources
Sentiment Analysis	Analyzing text to determine emotional tone (positive, negative, neutral) regarding specific issues, policies, or national image.	Gauge public mood, assess campaign effectiveness, identify areas of concern/support, understand reception of policies.	Nuance in language (irony, sarcasm), cultural differences in expression, data bias, context dependency.	Analyzing UN speeches ⁹ ; tracking public sentiment on social media ² ; informing foreign policy decisions. ¹¹
Narrative/Trend Detection	Identifying, tracking, and analyzing evolving stories, themes, and patterns in public discourse and media.	Early warning for crises/disinformation, understand how national image is framed, identify key influencers,	Complexity of narratives, identifying intent, distinguishing organic trends from manipulation, data	Predicting conflicts ² ; monitoring geopolitical tensions ¹¹ ; understanding information

		proactive strategy formulation.	volume.	campaigns. ¹¹
Public Opinion Aggregation (GenAI)	Using large language models (e.g., ChatGPT) to summarize commonly held perceptions based on vast online data.	Quick assessment of general global image/reputation, identify common knowledge/misconceptions.	Bias in training data (especially against Global South), lack of nuance, potential for stereotypical outputs, not designed as opinion aggregators.	Using ChatGPT to gauge views on a nation. ¹
Crisis Management Support	Utilizing AI to analyze real-time data during crises to inform response and communication.	Faster situational awareness, improved information management, more effective intervention.	Data accuracy in chaotic situations, risk of AI misinterpretation exacerbating crisis, managing sensitive information.	Real-time data analysis during conflicts or disasters. ³
Automated Content Generation	Using AI to draft press releases, social media posts, or initial speech drafts.	Increased efficiency, rapid content production.	Formulaic and generic outputs, lack of emotional depth or cultural nuance, potential for factual errors if not carefully reviewed.	AI-generated UN address deemed unmemorable. ¹
Information Analysis for Policy	Processing large volumes of reports, briefings, and diplomatic communications to extract insights.	Identify patterns, support evidence-based decision-making, formulate negotiation strategies.	Ensuring data quality, managing sensitive information, avoiding over-reliance on AI without human judgment.	Analyzing past negotiations ¹ ; processing diplomatic data. ²³

2.4. Natural Language Processing (NLP) for Bahasa Indonesia: Advances and Challenges

The development of effective AI tools for MoFA RI hinges on the capabilities of Natural Language Processing for Bahasa Indonesia. Indonesia's national language is spoken by hundreds of millions, yet in the NLP domain, it is often categorized as a "low-resource

language".¹² This designation implies that there are limited high-quality, well-labeled datasets and pre-trained models specifically tailored for Bahasa Indonesia, especially for specialized domains like diplomacy, compared to languages like English or Chinese.¹³ This presents both a significant challenge and a distinct opportunity for this research.

Existing Datasets and Resources:

Despite the low-resource label, progress has been made in developing datasets for Bahasa Indonesia NLP:

- **NusaX:** This is a significant multilingual parallel corpus that includes Indonesian and 10 other local Indonesian languages (Acehnese, Balinese, Banjarese, Buginese, Madurese, Minangkabau, Javanese, Ngaju, Sundanese, and Toba Batak), alongside English.¹² NusaX was created by translating an existing Indonesian sentiment analysis dataset, SmSA, using competent bilingual speakers and a quality assurance process.¹² It provides benchmarks for sentiment analysis and machine translation. For Indonesian sentiment analysis, NusaX offers splits for training, validation, and testing, with labels for positive, negative, and neutral sentiment.¹²
- **SmSA:** This dataset, used as the source for NusaX, contains comments and reviews in Indonesian, forming part of the IndoNLU benchmark.¹² While valuable for general sentiment, its direct applicability to the nuanced language of diplomacy may be limited without adaptation.
- **Universal Dependencies (UD_Indonesian-GSD):** This is part of the Universal Dependencies project, providing treebanks with morphological and syntactic annotations for Bahasa Indonesia, useful for foundational NLP tasks.³⁴
- **Other General Datasets:** Various other datasets for Indonesian sentiment analysis exist, often compiled from social media or e-commerce platforms.³⁵ These typically cover general topics rather than specific diplomatic discourse.

Relevant NLP Models and Techniques:

- **Transformer-based Models:** Pre-trained transformer models have demonstrated strong performance for Indonesian. **IndoBERT**, a BERT-based model specifically pre-trained on a large Indonesian corpus, and its variants (e.g., IndoBERT-base, IndoBERT-large) have achieved high accuracy on tasks like sentiment analysis within the NusaX benchmark.¹² Multilingual models like **XLM-RoBERTa (XLM-R)**, also show excellent performance, sometimes even outperforming monolingual models on Indonesian tasks due to cross-lingual transfer learning capabilities.¹²
- **General NLP Models:**
 - **VADER (Valence Aware Dictionary for Sentiment Reasoning)** is a rule-based sentiment analysis tool effective for social media texts due to its lexicon covering emojis and slang.⁹ However, its performance can diminish with formal, structured language where sentiment is expressed indirectly, a common feature of diplomatic texts.⁹
 - **BERT (Bidirectional Encoder Representations from Transformers)** and its variants offer contextual embeddings, enabling a deeper understanding of word

relationships and sentiment in longer, structured texts.⁹ However, BERT models can be susceptible to biases present in their training data, potentially leading to misclassifications of culturally nuanced or strategically ambiguous diplomatic language.⁹

- **Few-Shot Learning and Domain Adaptation:** Given the scarcity of labeled data in specialized domains like diplomacy, techniques for few-shot learning and domain adaptation are highly relevant. Frameworks like **FewTopNER**, which integrates few-shot Named Entity Recognition (NER) with topic modeling using models like XLM-RoBERTa, BiLSTMs, and CRFs, are promising for low-resource, multilingual scenarios.³⁶ Such approaches enable models to generalize from limited labeled examples by leveraging knowledge from related tasks or languages, which is critical for adapting to the diplomatic domain. The ability of FewTopNER to enhance entity disambiguation through topic-aware context is particularly valuable for understanding complex narratives.³⁷

Specific Challenges for Bahasa Indonesia NLP in Diplomatic Context:

1. **Data Scarcity for Diplomatic Domain:** The most significant challenge is the lack of large, publicly available, annotated datasets specifically for Indonesian diplomatic language.³⁸ General sentiment datasets (like SmSA focusing on reviews¹²) or news sentiment datasets²⁵ may not capture the unique linguistic features, vocabulary, and pragmatic nuances of diplomatic communication. This necessitates a focused effort on creating or adapting a corpus annotated for sentiment and narratives within the Indonesian diplomatic context. The quality of this domain-specific annotated data will be a critical determinant of the AI system's performance.
2. **Code-Switching and Informal Language:** Indonesian social media and online discussions, key data sources for public opinion, often feature code-switching (mixing Bahasa Indonesia and English, or other languages) and informal language, slang, and abbreviations.³³ NLP models must be robust to these variations.
3. **Nuance, Ambiguity, and Indirectness:** Diplomatic language is characterized by subtlety, politeness, hedging, irony, and strategic ambiguity.⁹ Standard sentiment analysis tools, trained on more direct language, may struggle to interpret these nuances accurately. For example, a statement that appears neutral or mildly positive on the surface might carry a strong diplomatic signal understood only in context.
4. **Multilingual Requirements:** While the primary focus is Bahasa Indonesia, MoFA RI operates in a multilingual environment, with English being a key language of international diplomacy. The system must effectively handle English text, and potentially identify or flag content in other languages relevant to specific diplomatic issues.
5. **Low-Resource Nature:** Beyond data, the "low-resource" status can also imply fewer off-the-shelf tools, pre-trained models specifically fine-tuned for niche tasks in Bahasa Indonesia, and a smaller research community compared to high-resource languages.¹³

The existence of resources like the NusaX dataset, covering 10 local Indonesian languages in addition to Bahasa Indonesia for tasks like sentiment analysis¹², hints at a broader linguistic landscape within the nation. While the immediate scope of this proposal centers on Bahasa Indonesia and English for international public diplomacy, the linguistic diversity of Indonesia

itself presents a future avenue. Engaging with the Indonesian diaspora or leveraging the nation's rich cultural tapestry in international messaging could, in the long term, benefit from NLP capabilities in major regional Indonesian languages. Developing core NLP strengths for Bahasa Indonesia could serve as a foundational step towards exploring these more nuanced, internal dimensions of public diplomacy.

2.5. Ethical Considerations and Governance of AI in Public Sector Diplomacy

The deployment of AI systems by government entities, particularly in sensitive areas like foreign policy and public diplomacy, necessitates a profound engagement with ethical considerations and robust governance frameworks. The power of AI to analyze data and influence decision-making brings with it responsibilities to ensure fairness, accountability, and respect for human rights.²

Key ethical considerations include:

- **Algorithmic Bias:** AI models learn from data, and if that data reflects existing societal biases (e.g., racial, gender, geopolitical), the AI system can perpetuate and even amplify these biases.² In the context of public diplomacy, biased AI could lead to misinterpretations of public opinion in certain regions, unfair targeting of specific groups, or the reinforcement of negative stereotypes, especially concerning Global South narratives.¹ For instance, AI models might disproportionately flag discussions from certain countries as negative or escalatory due to biases in training data.²⁸
- **Data Privacy:** The collection and analysis of publicly available data, such as social media posts and news articles, for gauging public opinion must be conducted with respect for individual privacy.²⁷ Even public data can contain sensitive information, and its aggregation and analysis by state actors require clear data protection protocols, data minimization strategies (collecting only necessary data and retaining it for limited periods), and adherence to relevant privacy regulations.⁴⁰
- **Misinformation and Manipulation:** While AI can help detect misinformation, it can also be used to create highly believable "real fakes" or deepfakes and disseminate sophisticated disinformation campaigns.² An AI tool used by an MFA must be designed to combat manipulation, not contribute to it, and its outputs must be critically assessed to ensure they are not based on manipulated input data.²⁷
- **Lack of Transparency and Explainability (XAI):** Many advanced AI models, particularly deep learning systems, operate as "black boxes," making it difficult to understand precisely how they arrive at a particular conclusion or classification.² This lack of transparency can hinder trust, make it difficult to identify and correct errors or biases, and complicate accountability. Efforts towards explainable AI are crucial in governmental applications.
- **Accountability:** Determining who is responsible when an AI-driven diplomatic decision or analysis leads to negative consequences is a complex challenge.² Clear lines of responsibility and oversight mechanisms are needed.

- **Digital Divide and Accessibility:** The benefits of AI in diplomacy should not exacerbate existing global inequalities. There's a risk of "digital colonialism" if AI development and deployment are monopolized by a few powerful nations, leaving less-developed countries at a disadvantage.²
- **Surveillance Concerns and Chilling Effects:** The use of AI by governments to monitor public opinion, even from public sources, can blur the line with surveillance.⁴⁰ If not carefully managed with strict safeguards and limitations on scope and purpose, such monitoring could potentially chill free speech or be perceived as targeting dissenting voices. It is vital to prohibit mass surveillance and prevent "mission creep," where tools designed for one purpose are expanded to others without proper authorization or oversight.⁴⁰

To address these risks, governments and agencies must invest in comprehensive evaluation frameworks, institute routine audits of AI models, and adopt tools to identify and correct biases before deployment.²⁷ This includes conducting thorough Privacy Impact Assessments (PIAs) that scrutinize data collection methods, consent, data minimization, and security.⁴⁰ Lessons from governance regimes for other sensitive data, such as clinical trial data which also involves privacy and proprietary concerns, might offer valuable insights for structuring access and oversight for social media data used in research or government analysis.⁴¹ The development and deployment of AI in diplomacy occur within a global context where international norms and standards for AI governance are still emerging.²⁹ Different nations and blocs may advocate for varying approaches to AI ethics and regulation, reflecting their own values and strategic interests.² The behavior of different large language models, for example, has been shown to vary in recommending escalatory versus de-escalatory responses in foreign policy scenarios, likely due to differences in training data and fine-tuning practices.²⁸ For Indonesia, as it develops and adopts AI tools like the one proposed, it is important to be cognizant of these geopolitical dynamics. The chosen models, data handling practices, and ethical frameworks should not only be technically sound and internally robust but also align with Indonesia's "independent and active" foreign policy principles and its broader vision for a just and equitable global order, including in the digital realm. The experience gained from developing and implementing this AI system could, in turn, inform Indonesia's contributions to international discussions on AI governance in diplomacy.

Chapter 3: Proposed AI Framework for MoFA RI's Public Diplomacy

3.1. Conceptual Framework: An AI-Augmented Public Diplomacy Cycle for MoFA RI

The proposed AI framework is designed to integrate seamlessly into and enhance MoFA RI's existing public diplomacy cycle. It aims to transform the Ministry's capacity to understand and engage with the global information environment by providing continuous, data-driven insights.

This framework envisions a collaborative synergy between AI capabilities and human diplomatic expertise, where technology augments, rather than replaces, the critical judgment and strategic thinking of MoFA RI officials. This approach acknowledges that while AI can analyze vast datasets and identify patterns beyond human capacity, the nuances of diplomatic language, cultural context, and strategic implications require human interpretation.¹

The AI-augmented public diplomacy cycle can be conceptualized as follows:

1. **Monitoring:** The AI system will continuously collect and ingest publicly available data from diverse online sources, including social media platforms, international and national news outlets, influential blogs, and relevant public forums. This data will primarily be in Bahasa Indonesia and English.
2. **Analysis:** The core AI engine will perform sophisticated NLP tasks on the collected data. This includes:
 - **Sentiment Analysis:** To determine the polarity (positive, negative, neutral) and potentially the emotional undertones of discussions related to Indonesia, its policies, and specific diplomatic initiatives.
 - **Narrative Detection:** To identify dominant and emerging narratives, key themes, recurring topics, and the main actors (individuals, organizations, states) shaping these narratives.
3. **Insight Generation:** The system will process the analytical outputs to generate actionable insights. This involves:
 - Identifying significant shifts in public sentiment.
 - Highlighting key trends in public discourse.
 - Mapping influential narratives and their sources.
 - Detecting potential misinformation or disinformation campaigns related to Indonesia's interests.
4. **Strategy Formulation & Refinement:** The generated insights will be made available to relevant MoFA RI units, primarily the Directorate General of Information and Public Diplomacy (Ditjen IDP) for operational public diplomacy and the Foreign Policy Strategy Agency (BSKLN) for strategic foresight and policy recommendations. These insights will inform:
 - The development and refinement of public diplomacy campaigns.
 - The crafting of targeted messaging for specific audiences.
 - The formulation of responses to international developments or criticisms.
 - The proactive shaping of narratives favorable to Indonesia's national interests.This directly addresses the need for MoFA RI to move beyond reactive stances and actively engage in narrative construction.
5. **Engagement:** Guided by the AI-driven insights, MoFA RI can undertake more targeted and effective public engagement activities. This could involve identifying key influencers to engage with, tailoring content for specific platforms, or addressing misconceptions identified by the system.
6. **Evaluation:** The AI framework will also support the evaluation of public diplomacy initiatives. By continuously monitoring sentiment and narrative landscapes, MoFA RI can

track changes over time and assess the impact of its campaigns and communication efforts, allowing for iterative improvement.

This cyclical process emphasizes a dynamic interplay between AI-driven data analysis and human strategic oversight. Diplomats will use the AI system as an advanced "listening post" and analytical tool, but they will remain the ultimate decision-makers, applying their expertise to interpret the insights, consider the broader geopolitical context, and formulate appropriate actions.

3.2. Data Acquisition and Preparation

The quality and relevance of the data underpinning the AI system are paramount to its success. The data acquisition and preparation phase will involve a systematic approach to gathering and processing information from diverse online sources.

Data Sources:

The primary data sources will be publicly accessible online content:

- **Social Media Platforms:**
 - **Twitter (X):** A key platform for real-time discussions, news dissemination, and official communications by governments and diplomats. Public tweets relevant to specified keywords and accounts will be collected.
 - **Facebook:** Public pages and groups discussing Indonesian foreign policy, international relations, and perceptions of Indonesia.
 - **Instagram:** Public posts and comments, particularly those related to visual narratives or public figures discussing relevant topics.
 - **YouTube:** Comments on videos from news channels, official MoFA RI channels, or influential content creators discussing relevant issues.
- **News Media:** Online articles from a curated list of major Indonesian national news outlets, prominent international news agencies, and news sources from key partner countries or regions of diplomatic focus.
- **Blogs and Public Forums:** Posts and discussions from influential blogs focusing on international affairs, Indonesian politics, and relevant public online forums where opinions on Indonesia are expressed.

Language Focus:

The primary languages for data collection and analysis will be Bahasa Indonesia and English. These represent the main language of domestic discourse and a principal language of international diplomacy, respectively. The system will incorporate mechanisms to identify content in these languages. While full analysis of other languages is beyond the initial scope, the system may include functionalities to flag significant volumes of content in other key languages (e.g., Arabic, Mandarin, languages of major ASEAN partners) based on emerging diplomatic priorities, for potential future manual review or integration into multilingual models.

Data Collection Methods:

- **APIs (Application Programming Interfaces):** Where available and permissible under terms of service (e.g., Twitter API, potentially news APIs), APIs will be used for structured data collection.
- **Web Scraping:** For sources without suitable APIs, ethical web scraping techniques will

be employed. This will be done in strict adherence to website robots.txt files, terms of service, and at a rate that does not unduly burden a website's servers. Transparency about scraped sources will be maintained.

Data Preprocessing:

Raw data collected from online sources is often noisy and requires significant preprocessing to be suitable for NLP models:

- **Cleaning:** Removal of irrelevant content such as HTML tags, JavaScript code, advertisements, special characters, and excessive punctuation.
- **Normalization:** Standardization of text to address common issues in online Indonesian and English, including:
 - Handling slang, colloquialisms, and abbreviations (e.g., "yg" for "yang," "tdk" for "tidak" in Indonesian).
 - Correcting common typographical errors (though this must be done cautiously to avoid altering intended meaning).
 - Lowercasing text (or consistent casing).
- **Tokenization:** Breaking down text into individual words or sub-word units (tokens). This will require tokenizers appropriate for Bahasa Indonesia's morphology and English.
- **Handling Code-Switching:** Indonesian online discourse frequently involves code-switching between Bahasa Indonesia and English.³³ Strategies will be developed to manage this, which may include:
 - Using multilingual pre-trained models (like XLM-R) that are inherently more robust to code-switched text.
 - Developing specific pre-processing steps to identify and segment code-switched portions if necessary for certain models.
 - Ensuring annotation guidelines account for code-switched examples.
- **Deduplication:** Identifying and removing duplicate or near-duplicate content.

Annotation Strategy (for Custom Model Training/Fine-tuning):

Given the unique characteristics of diplomatic language and the current lack of large, specialized datasets for Indonesian diplomatic sentiment and narrative analysis⁹, a crucial part of this research will be the creation of a custom-annotated corpus. This is fundamental because off-the-shelf models trained on general text (e.g., product reviews¹² or generic news) are unlikely to perform optimally on the nuanced, often indirect, and context-heavy language of diplomacy.⁹ The quality of the AI system will directly depend on the quality and relevance of this annotated data.

The annotation strategy will involve:

1. **Developing Detailed Annotation Guidelines:** These guidelines will define categories for sentiment (e.g., positive, negative, neutral, and potentially more granular emotions like 'trust', 'concern', 'support', 'criticism' relevant to diplomatic contexts) and elements of narratives (e.g., key actors, targets, themes, claims, frames). The guidelines will provide clear instructions and examples, specifically addressing ambiguity, irony, and indirect speech in Bahasa Indonesia and English diplomatic texts.
2. **Selecting and Training Annotators:** A team of human annotators will be recruited. Ideal annotators would possess proficiency in both Bahasa Indonesia and English, and

preferably have some background or understanding of international relations or Indonesian foreign policy to better grasp contextual nuances. Rigorous training on the annotation guidelines will be provided.

3. **Iterative Annotation Process:** An initial batch of data will be annotated. Inter-annotator agreement (IAA) scores (e.g., Cohen's Kappa or Krippendorff's Alpha) will be calculated to measure the consistency of annotations. If IAA is low, the guidelines will be refined, and further training will be conducted. This iterative process will continue until satisfactory IAA is achieved, ensuring the reliability of the annotated dataset.
4. **Corpus Size:** The aim will be to create a moderately sized, high-quality corpus sufficient for fine-tuning pre-trained language models and for robust evaluation.

This dedicated annotation effort is a core component of the research's contribution to the state of the art, addressing the critical need for domain-specific labeled data in low-resource NLP for specialized applications.

3.3. Core AI Engine: Sentiment Analysis and Narrative Detection for Bahasa Indonesia

The heart of the proposed framework is its AI engine, comprising two main modules: one for sentiment analysis and another for narrative and trend detection. These modules will be developed primarily for Bahasa Indonesia and English.

3.3.1. Sentiment Analysis Module

This module will analyze text to determine the underlying sentiment expressed towards Indonesia, its foreign policies, specific events, or diplomatic actions.

- **Models:**
 - **Fine-tuning Pre-trained Transformer Models:** The primary approach will involve fine-tuning state-of-the-art pre-trained language models on the custom-annotated diplomatic dataset created in the previous phase.
 - **IndoBERT:** As a model specifically pre-trained on a large Indonesian corpus, IndoBERT (and its variants) is a strong candidate for Bahasa Indonesia sentiment analysis.¹² Fine-tuning it on diplomatic text will adapt its understanding to the specific vocabulary and nuances of this domain.
 - **Multilingual Models (e.g., XLM-RoBERTa):** These models, pre-trained on multiple languages, have shown excellent performance, sometimes even outperforming monolingual models due to cross-lingual transfer.¹² XLM-R would be particularly useful for handling both English and Bahasa Indonesia text, and potentially for its inherent robustness to code-switching.
 - **Baseline/Complementary Models:**
 - **VADER:** For social media text, VADER can serve as a useful baseline or a complementary tool, especially for its ability to handle informal language, emojis, and intensifiers.⁹ However, its limitations with formal or indirect diplomatic speech will be acknowledged.⁹
 - **Ensemble Methods:** Consideration will be given to employing ensemble methods, which combine the predictions of multiple models to potentially achieve

higher accuracy and robustness than any single model.

- **Output:**
 - The module will output sentiment scores, typically classifying text as **positive, negative, or neutral**.
 - A **compound score** (e.g., ranging from -1 to +1) indicating the overall intensity and direction of sentiment may also be generated.
 - Exploration will be made into classifying more granular **emotions** relevant to diplomatic contexts, such as 'trust', 'distrust', 'support', 'opposition', 'concern', 'hope', if the annotated data allows for such distinctions.
- **Addressing Nuance:** A key challenge is handling the subtleties of diplomatic and online language. Techniques to address this will include:
 - Developing annotation guidelines that explicitly cover irony, sarcasm, politeness, and indirect sentiment.
 - Leveraging the contextual understanding capabilities of transformer models.
 - Potentially incorporating features related to linguistic markers of indirectness or hedging.

3.3.2. Narrative and Trend Detection Module

This module aims to move beyond simple sentiment to identify and understand the broader stories, themes, and trends shaping public discourse about Indonesia.

- **Techniques:**
 - **Topic Modeling:**
 - Traditional methods like **Latent Dirichlet Allocation (LDA)** can be used as a baseline to identify prevalent themes and topics within the collected text corpus over different time periods.
 - More advanced **Neural Topic Models** (e.g., based on variational autoencoders or transformers) will be explored for their ability to capture more coherent and semantically rich topics.
 - **Named Entity Recognition (NER):** Identifying and categorizing key named entities – such as persons (e.g., political leaders, diplomats), organizations (e.g., MoFA RI, ASEAN, specific NGOs), locations (e.g., countries, regions), and specific policies or events – is crucial. This helps to understand *who* is talking about *what* in relation to *whom*. The custom-annotated dataset may include NER tags for entities relevant to diplomacy.
 - **Event Detection:** Identifying significant occurrences or shifts in discourse that might indicate emerging issues or reactions to diplomatic actions. This could involve looking for spikes in mentions of certain keywords or entities, or shifts in sentiment around them.
 - **Trend Analysis:** This involves tracking the frequency, sentiment, and co-occurrence of identified topics and entities over time. This allows for spotting emerging narratives, observing the decline of older ones, and understanding the velocity and trajectory of public discourse.
 - **Advanced Frameworks for Narrative Understanding:**
 - The applicability of frameworks like **FewTopNER**³⁶ will be investigated. Its

approach of integrating few-shot NER with topic-aware contextual modeling is highly relevant. For instance, by linking recognized entities (e.g., a specific diplomat, a policy name) to the broader topics discussed in a document (e.g., "human rights," "economic cooperation," "territorial dispute"), the system can achieve better entity disambiguation and a richer understanding of the narrative context. The cross-task bridge in such a framework, allowing dynamic interaction between entity and topic representations, is key for low-resource settings and for uncovering how specific actors or issues are framed within larger narratives.³⁷

- **Computational Narrative Analysis:** Drawing inspiration from emerging NLP techniques for **comparative narrative analysis**¹⁰, the module could aim to identify not just individual narratives, but also how different sources or actors present conflicting, overlapping, or unique perspectives on a particular diplomatic issue. This involves more than summarization; it delves into analyzing, contrasting, and interpreting narrative structures.

- **Output:**
 - Identification of key **narratives** (e.g., "Indonesia as a regional leader," "Concerns over [specific policy]," "Support for Indonesia's stance on [global issue]").
 - Tracking the **evolution** of these narratives over time.
 - Identifying the main **topics and entities** associated with each narrative.
 - Pinpointing **influential actors** (e.g., media outlets, social media accounts, organizations) that are actively propagating or shaping these narratives.
 - Alerts on rapidly emerging or potentially harmful narratives (e.g., disinformation).

Table 3.1: NLP Models and Datasets for Bahasa Indonesia Sentiment and Narrative Analysis

Model/Dataset	Key Features for Bahasa Indonesia	Strengths	Limitations	Relevance to Diplomatic Text
IndoBERT	Transformer model pre-trained on large Indonesian corpus.	Strong baseline for various Indonesian NLP tasks; captures contextual understanding.	May require significant fine-tuning for specialized diplomatic language; general pre-training might not cover all diplomatic nuances.	High relevance for sentiment analysis and as a base for NER/topic modeling after domain-specific fine-tuning. ¹²
XLM-RoBERTa (XLM-R)	Multilingual transformer model.	Excellent cross-lingual transfer	Requires fine-tuning; general	High relevance for handling both Bahasa Indonesia

		capabilities; robust to code-switching; strong performance on Indonesian tasks.	multilingual pre-training.	and English; good for code-switched social media text; adaptable for sentiment and narrative tasks. ¹²
NusaX Dataset	Multilingual parallel corpus including Indonesian; sentiment labels.	Provides benchmark for Indonesian sentiment; includes 10 local Indonesian languages.	Sentiment labels are general (positive, negative, neutral); based on SmSA (reviews, comments), not diplomatic text.	Useful for initial model training/benchmarking general Indonesian sentiment; foundation for understanding low-resource challenges. ¹²
SmSA Dataset	Indonesian sentiment dataset (comments, reviews).	Source for NusaX; provides general Indonesian sentiment data.	Domain is not diplomatic; may lack nuanced expressions found in foreign policy discourse.	Limited direct relevance, but informs about general Indonesian sentiment resources. ¹²
FewTopNER-inspired Architecture	Integrates few-shot NER with topic-aware contextual modeling (uses XLM-RoBERTa, BiLSTM, CRF).	Designed for low-resource, multilingual scenarios; enhances entity disambiguation with topic context; cross-task learning.	Complex architecture; requires careful adaptation and implementation for the specific narrative detection task.	High potential for advanced narrative detection, linking entities to themes, especially valuable given limited diplomatic domain data for Bahasa Indonesia. ³⁶
Custom-Annotated Diplomatic Corpus (Proposed)	To be created; text from news/social media on Indonesian diplomacy, annotated for sentiment (nuanced) and	Domain-specific; tailored to MoFA RI's needs; addresses lack of relevant labeled data.	Creation is time-consuming and resource-intensive; requires careful guideline development and quality control.	Crucial for achieving high accuracy and relevance for both sentiment analysis and narrative detection modules.

	narrative elements.			
VADER	Lexicon and rule-based sentiment analysis tool.	Good for informal social media text, emojis, slang.	Less effective for formal, nuanced, or indirect language common in diplomacy; not context-aware like transformers.	Potential as a supplementary tool for quick analysis of social media chatter, but not as the primary sentiment engine for diplomatic text. ⁹

The development of this core AI engine, particularly the adaptation and fine-tuning of models on a custom-built diplomatic corpus for Bahasa Indonesia, represents a significant technical undertaking and a core contribution of this research.

3.4. Output and Visualization: Actionable Insights for Diplomats

For the AI framework to be truly effective, its analytical outputs must be translated into clear, concise, and actionable insights that diplomats can readily understand and utilize. This requires a well-designed user interface, typically a dashboard, and reporting functionalities.

- **Dashboard:** A secure, web-based dashboard will be conceptualized as the primary interface for MoFA RI officials (from Ditjen IDP, BSKLN, and relevant regional or thematic desks). This dashboard will aim to display:
 - **Real-time Sentiment Trends:** Visualizations (e.g., line graphs, bar charts) showing the overall sentiment (positive, negative, neutral) towards key issues, policies, Indonesia's image, or specific diplomatic events, filterable by language (Bahasa Indonesia, English), source type (social media, news), and time period.
 - **Dominant and Emerging Narratives:** A section identifying the most prevalent narratives detected by the system, perhaps visualized as a network graph showing key themes, entities, and their relationships. It should also highlight newly emerging narratives that might require attention.
 - **Key Influencers and Sources:** Identification of influential social media accounts, news outlets, or organizations that are driving conversations or shaping narratives related to Indonesia. This could include metrics like reach, engagement, or frequency of posting on relevant topics.
 - **Geographical Distribution (where feasible):** If location data can be reliably and ethically inferred from sources (e.g., user profiles, news outlet origin), the dashboard might offer a map-based visualization of where certain sentiments or narratives are concentrated globally or in key regions. This is often challenging and must be approached with caution regarding privacy.
 - **Alerts and Notifications:** The system should incorporate an alerting mechanism to notify users of significant and sudden shifts in sentiment, the rapid emergence of a potentially harmful narrative (e.g., disinformation), or unusual activity around

- key topics.
 - **Comparative Analysis:** Ability to compare sentiment or narratives across different issues, time periods, or in response to specific MoFA RI campaigns.
- **Reporting:**
 - **Automated Summary Reports:** The framework should be capable of generating periodic (e.g., daily, weekly) summary reports that encapsulate the key findings on public opinion and narrative landscapes. These reports could be customizable to focus on specific areas of interest.
 - **Exportable Data:** Functionality to export raw data or aggregated insights in standard formats (e.g., CSV, PDF) for further analysis or inclusion in internal MoFA RI briefings.
- **Explainability (XAI):**
 - While full explainability of complex NLP models is an ongoing research challenge, the system will strive to incorporate elements of XAI. This could involve:
 - Highlighting the specific words or phrases in a text that contributed most to its sentiment classification.
 - Showing example posts or articles that are representative of a detected narrative.
 - Providing some level of confidence score for its classifications or identifications.
 - The goal is to move beyond "black box" outputs, fostering trust in the system and enabling diplomats to better understand and critically evaluate the AI's findings before making decisions.

The design of the dashboard and reports will be guided by user-centered principles, developed in consultation with potential MoFA RI users to ensure that the information is presented in the most intuitive and useful manner for their specific workflows and decision-making needs.

3.5. Integration with MoFA RI's Existing Digital Diplomacy Infrastructure

The successful adoption of the proposed AI framework will depend on its ability to integrate with or complement MoFA RI's existing digital diplomacy infrastructure and practices. This requires a thoughtful approach that builds upon current capabilities and aligns with organizational realities.

- **Building on Current Practices:** MoFA RI, particularly through Ditjen IDP, already engages in social media monitoring and has experience with digital communication strategies.⁷ The AI system will be positioned as an advanced tool that significantly enhances these existing efforts by providing deeper, more automated, and more proactive analysis.
- **Learning from Past Tool Usage:** The Ministry's experience with tools like Drone Emprit Academic (DEA) for analyzing the #BDF2019 Twitter campaign offers valuable lessons.⁸ This prior engagement with social media analytics means that there is an existing

awareness of the potential benefits of such tools, such as identifying top hashtags, key influencers, and understanding social network structures around specific events.⁸ The design of the new AI system can learn from what aspects of DEA were found useful by MoFA RI staff and what limitations or desired features were identified. This can lead to a more intuitive user interface and an output format that resonates with users already familiar with basic analytics concepts. The AI system is not being introduced into an analytical vacuum but can be seen as an evolution of these earlier capabilities.

- **Compatibility and Security:**
 - The framework will be designed with consideration for MoFA RI's existing IT environment and security protocols. As a prototype, it might initially operate as a standalone system, but future deployment would require close collaboration with MoFA RI's IT department.
 - Data security and access control will be paramount, ensuring that sensitive analyses and user data are protected.
- **APIs and Data Exchange:**
 - For potential future integration with other internal MoFA RI systems (e.g., internal knowledge management platforms, crisis response systems), the AI framework could be designed to offer APIs or standardized data export functionalities. This would allow insights generated by the AI to be utilized more broadly within the Ministry.
- **User Training and Capacity Building:** A critical component of integration will be providing comprehensive training to MoFA RI personnel on how to use the system effectively, interpret its outputs critically, and understand its capabilities and limitations. This aligns with the human-AI collaboration model, empowering diplomats to leverage the tool to its full potential.

By considering these integration aspects from the outset, the aim is to develop an AI framework that is not only technically sound but also operationally viable and valuable within the specific context of MoFA RI.

Chapter 4: Feasibility, Expected Contributions, and Limitations

4.1. Technical Feasibility and Resource Implications

The development of the proposed AI framework for MoFA RI is considered technically feasible, leveraging advancements in NLP and machine learning. However, it requires careful consideration of data, computational resources, expertise, and the technology stack.

- **Data Availability and Curation:**
 - Publicly available data from social media (Twitter/X, Facebook, etc.) and online news media is abundant.¹ The primary challenge lies not in the raw volume, but in accessing it systematically (e.g., through APIs which may have costs or restrictions, or ethical web scraping) and, crucially, curating and annotating it for

the specific diplomatic domain in Bahasa Indonesia and English. As highlighted, creating a high-quality, domain-specific annotated corpus is a significant but achievable task, forming a core part of the research.⁹

- **Computational Resources:**
 - Training and fine-tuning large NLP models, especially transformers like IndoBERT or XLM-R, require substantial computational resources, primarily Graphics Processing Units (GPUs).¹²
 - Options for accessing these resources include:
 - University high-performance computing (HPC) clusters.
 - Cloud computing platforms (e.g., AWS, Google Cloud, Azure), which offer scalable GPU instances.
 - Potentially leveraging national HPC infrastructure in Indonesia, if available and accessible for academic research with governmental collaboration.
 - Inference (using the trained models for analysis) is generally less resource-intensive than training but still requires adequate server capacity for a real-time or near real-time system.
- **Expertise:**
 - The project necessitates a multidisciplinary team or a researcher with a diverse skillset, including:
 - **NLP Specialists:** For model development, fine-tuning, and addressing linguistic challenges.
 - **Machine Learning Engineers:** For building and deploying the AI pipeline.
 - **Software Developers:** For creating the data ingestion system, database, and user interface/dashboard.
 - **Domain Experts from MoFA RI:** Crucial for defining requirements, providing context for diplomatic language, assisting with annotation guidelines, and evaluating the utility of the system. Their involvement is key to ensuring the tool is relevant and practical.
- **Technology Stack:**
 - The framework will primarily utilize open-source technologies to promote accessibility and reduce costs:
 - **NLP Libraries:** Hugging Face Transformers (for pre-trained models like IndoBERT, XLM-R), spaCy, NLTK.
 - **Machine Learning Frameworks:** PyTorch or TensorFlow.
 - **Programming Languages:** Python will be the primary language for AI development.
 - **Database Technologies:** Suitable databases for storing text data and analytical results (e.g., PostgreSQL, Elasticsearch).
 - **Data Processing and Pipeline Tools:** Apache Spark or Dask for handling large datasets, Airflow or similar for workflow orchestration.
 - **Visualization Tools:** Libraries like D3.js, Plotly, or BI tools for creating the dashboard.
- **Technology Adoption Factors:**

- Drawing from studies on technology adoption (even if in different sectors like MSMEs in Indonesia ⁴³), the successful uptake of this AI system within MoFA RI will likely be influenced by:
 - **Performance Expectancy:** The perceived benefits and effectiveness of the tool in enhancing public diplomacy work. Clear demonstration of value is crucial.
 - **Effort Expectancy:** The ease of use and simplicity of the system. An intuitive interface and clear outputs will be vital for adoption by diplomats who may not be AI experts.
 - **Social Influence and Facilitating Conditions:** Support from MoFA RI leadership and the availability of training and technical assistance will also play a role.

While challenging, the technical aspects are manageable with a well-defined research plan and access to appropriate resources and expertise.

4.2. Expected Contributions to MoFA RI's Public Diplomacy Effectiveness

The implementation of the proposed AI framework is expected to yield significant contributions to the effectiveness of MoFA RI's public diplomacy efforts:

- **Enhanced Situational Awareness:** The system will provide MoFA RI with a deeper, more nuanced, and near real-time understanding of global public opinion, sentiment shifts, and prevailing narratives concerning Indonesia and its foreign policy.² This moves beyond anecdotal evidence or sporadic surveys to continuous, data-driven monitoring.
- **Proactive Strategy Formulation:** By identifying emerging trends, potential reputational risks, and nascent narratives early, the AI tool can empower MoFA RI to move from a reactive to a more proactive stance in its public diplomacy.²⁶ This allows for timely interventions to shape narratives, counter misinformation, or capitalize on positive sentiment. This ability to anticipate and act, rather than merely respond, is a crucial shift enabled by such AI capabilities.
- **Targeted and Resonant Messaging:** Insights into specific audience sentiments and the narratives that resonate with them will enable Ditjen IDP to craft more targeted, culturally sensitive, and impactful communication strategies.¹
- **Improved Crisis Communication:** During international crises or events that negatively impact Indonesia's image, the AI system can help rapidly identify the spread of adverse narratives or misinformation, allowing for quicker and more effective crisis communication responses.³
- **Efficient Resource Allocation:** By understanding where public diplomacy efforts are most needed (e.g., regions with negative sentiment, platforms where critical narratives are gaining traction), MoFA RI can allocate its human and financial resources more efficiently and effectively.
- **Measurable Impact Assessment:** The framework can provide data-driven metrics to help evaluate the impact of public diplomacy campaigns by tracking changes in

sentiment and narrative prevalence over time, offering a more objective assessment of effectiveness than traditional methods.

- **Strengthening National Image and Soft Power:** Ultimately, by enabling more sophisticated understanding and engagement with global publics, the AI framework can contribute to building a more positive and accurate international perception of Indonesia, thereby strengthening its soft power and influence on the world stage.
- **Data-Driven Policy Input:** Insights from the system can also feed into the broader foreign policy formulation process within BSKLN, providing an evidence base for strategic decisions that considers public perception dimensions.¹⁵

These contributions collectively aim to equip MoFA RI with a significant strategic advantage in navigating the complexities of the 21st-century information environment.

4.3. Advancements to SOTA in Low-Resource NLP and AI for Diplomacy

This research is poised to make several notable advancements to the State of the Art (SOTA) in both low-resource NLP and the application of AI in diplomacy:

1. Novel Techniques for Bahasa Indonesia Diplomatic Text:

- The core SOTA contribution will be the development, adaptation, and rigorous evaluation of advanced NLP models (e.g., fine-tuned transformers, architectures inspired by frameworks like FewTopNER³⁶) specifically for sentiment analysis and narrative detection within the context of Bahasa Indonesia diplomatic discourse. This involves more than just applying existing models; it requires innovative approaches to handle the linguistic nuances, data scarcity, and specific requirements of this domain and language. This focus on a less-represented language in a highly specialized field directly addresses a gap in current AI research, which often prioritizes high-resource languages or more general domains.¹²

2. Creation of a Valuable, Domain-Specific Annotated Corpus:

- A significant output will be the methodology for, and potentially the creation of, a unique annotated corpus of Bahasa Indonesia (and English) text related to diplomacy. This corpus, labeled for nuanced sentiment and narrative elements, will be an invaluable resource for future research and development in NLP for Indonesian and for comparative studies in diplomatic language. Such domain-specific, annotated datasets are critically lacking for most low-resource languages.³⁸

3. Case Study for AI in Diplomacy for Developing Nations:

- The research will provide a comprehensive case study of designing and prototyping an AI tool for a Ministry of Foreign Affairs in a major developing country. This offers practical insights and a potential model for other nations in the Global South that are seeking to harness AI for their public diplomacy but face similar challenges, such as limited local AI expertise or low-resource language issues. It demonstrates a pathway to developing sovereign AI

capabilities tailored to national needs, rather than relying solely on off-the-shelf solutions from other regions that may carry inherent biases or not be optimized for local contexts.

4. Bridging Theory and Practice in AI for Public Diplomacy:

- By focusing on the specific needs and operational context of MoFA RI, the research bridges theoretical advancements in AI and NLP with the practical requirements of diplomatic work. This includes developing user-centric outputs and considering integration pathways.

5. Insights into Ethical AI Governance in a Non-Western Context:

- The ethical framework developed and the challenges encountered will contribute to the broader discourse on responsible AI governance, particularly from the perspective of a large, democratic, non-Western nation. This can inform both national policies and international discussions on AI ethics in the public sector.

These contributions aim to push the boundaries of current knowledge and provide tangible assets (like datasets or adapted models) and insights that can benefit both the academic community and diplomatic practitioners, especially in Indonesia and other similar national contexts.

4.4. Potential Challenges, Risks, and Mitigation Strategies (Technical, Ethical, Operational)

The development and implementation of an AI framework for MoFA RI's public diplomacy, while promising, are not without potential challenges and risks. Proactive identification and mitigation strategies are essential.

Technical Challenges:

- **Accuracy and Nuance in NLP:**
 - *Challenge:* Achieving high accuracy in sentiment analysis and narrative detection for the nuanced, often ambiguous, and context-dependent language of diplomacy, especially in Bahasa Indonesia.⁹
 - *Mitigation:* Extensive domain-specific annotation of a custom corpus; use of advanced contextual models (transformers); iterative model refinement; human-in-the-loop validation for critical classifications; exploring techniques specifically for irony and indirect speech.
- **Data Volume, Velocity, and Variety:**
 - *Challenge:* Effectively processing and analyzing the large volume and high velocity of data from diverse online sources in near real-time.
 - *Mitigation:* Designing scalable data ingestion and processing pipelines; employing efficient algorithms and database solutions; prioritizing key data sources.
- **Robustness to Evolving Language and Narratives:**
 - *Challenge:* Online language, slang, and diplomatic narratives evolve rapidly. AI models trained on past data may become less effective over time.
 - *Mitigation:* Implementing a system for continuous model monitoring and periodic retraining with new data; developing mechanisms for users to flag new terms or

narratives for inclusion.

- **Handling Code-Switching:**

- *Challenge:* Effectively processing text that mixes Bahasa Indonesia and English, common in Indonesian online spaces.³³
- *Mitigation:* Utilizing multilingual models (e.g., XLM-R) robust to code-switching; specific annotation and pre-processing strategies for code-switched data.

Ethical Risks:

The ethical risks associated with government use of AI for public opinion analysis are significant and require a dedicated mitigation framework.

Table 4.1: Ethical Risk Matrix and Mitigation Framework for AI in MoFA RI Public Diplomacy

Ethical Concern	Potential Impact	Likelihood	Severity	Proposed Mitigation Measures	Source(s)
Algorithmic Bias	Misrepresentation of public opinion; unfair targeting; reinforcement of stereotypes (e.g., against Global South); flawed policy recommendations.	Medium-High	High	Diverse and representative training data; bias detection and mitigation techniques during model development; regular audits for bias; human oversight and critical review of AI outputs; transparency in model limitations.	¹
Data Privacy	Violation of individual privacy through collection and analysis of public (but potentially sensitive) data; unauthorized access to	Medium	Medium-High	Strict adherence to data protection regulations (national and international); data minimization (collect only necessary data);	²⁷

	analyzed data.			anonymization/pseudonymization where possible; robust data security measures for storage and access; clear policies on data retention and deletion.	
Misinformation and Manipulation (by the tool or through its misuse)	AI tool could be used to generate misleading analyses if fed manipulated data, or its outputs could be selectively used to manipulate opinion. Risk of AI itself generating "real fakes" if extended to content generation.	Low (for tool generating misinformation if designed for analysis only); Medium (for misuse of outputs)	High	Focus on analysis, not generation of public-facing content; rigorous validation of input data sources; training for diplomats on critical interpretation of outputs; clear guidelines against misuse; transparency about system capabilities.	²
Lack of Transparency and Explainability (XAI)	"Black box" nature of AI makes it hard to understand decisions, hindering trust, accountability, and error correction.	High (for complex models)	Medium	Incorporate XAI techniques where feasible (e.g., LIME, SHAP for feature importance); provide confidence scores; allow users to	²

				inspect data points influencing classifications; clear documentation of model design and limitations.	
Accountability Deficit	Difficulty in assigning responsibility if AI-informed decisions lead to negative diplomatic outcomes or societal harm.	Medium	High	Clear governance structure defining roles and responsibilities for AI system use and oversight; human-in-the-loop for all critical decisions; audit trails for system usage and decisions.	²
Surveillance Creep and Chilling Effects	AI tool for public opinion monitoring could be expanded for broader surveillance, potentially chilling free speech or targeting dissent.	Medium	High	Strict definition of scope and purpose; prohibition of mass surveillance; independent oversight; regular reviews to prevent mission creep; public transparency about the system's purpose (within national security	⁴⁰

				constraints).	
Digital Divide / Unequal Representation	AI analysis might overrepresent voices from digitally connected populations or underrepresent marginalized groups or those using less common platforms/languages.	Medium	Medium	Conscious effort to include diverse data sources if possible; awareness of potential representation gaps in analysis; supplementing AI insights with other forms of diplomatic intelligence.	2

Operational Challenges:

- **Integration into Existing MoFA RI Workflows:**
 - *Challenge:* Ensuring the AI tool is not seen as an additional burden but as a valuable asset that integrates smoothly into the daily work of diplomats in Ditjen IDP, BSKLN, and other relevant units.
 - *Mitigation:* Participatory design involving end-users from the start; phased rollout with pilot programs; providing comprehensive training and ongoing support; demonstrating clear value and time-saving benefits.
- **Resistance to Adoption:**
 - *Challenge:* Potential skepticism or resistance from personnel accustomed to traditional methods or wary of new technologies.⁴³
 - *Mitigation:* Strong leadership endorsement; clear communication of benefits (Performance Expectancy); user-friendly interface (Effort Expectancy); showcasing success stories/use cases; addressing concerns about job displacement by emphasizing augmentation, not replacement.
- **Sustainability and Maintenance:**
 - *Challenge:* Ensuring the long-term technical sustainability, maintenance, and updating of the AI system beyond the research phase.
 - *Mitigation:* Planning for long-term support (in-house MoFA RI IT team, external contractors, or further academic collaboration); developing clear documentation; designing for modularity to facilitate updates.
- **Inter-departmental Coordination:**
 - *Challenge:* Ensuring effective coordination between different MoFA RI departments (e.g., Ditjen IDP, BSKLN, IT department, regional desks) for data sharing, system use, and feedback.
 - *Mitigation:* Establishing clear protocols for use and information flow; creating a

cross-departmental working group or steering committee for the AI initiative. Addressing these multifaceted challenges proactively is crucial for the successful development, ethical deployment, and sustained impact of the AI framework within MoFA RI. The geopolitical context of AI standards and data governance also warrants attention. As Indonesia develops its AI capabilities, its approach can inform its stance in international discussions on AI ethics and regulation.² Aligning the system's development with Indonesia's foreign policy principles and its vision for global AI governance will be an important underlying consideration, ensuring that technological advancement serves national interests while contributing to a responsible global AI ecosystem.

Chapter 5: Preliminary Research Plan

This chapter outlines a preliminary plan for executing the proposed research, structured in distinct phases with key activities and estimated timelines.

5.1. Phase 1: Requirements Elicitation, Ethical Framework Development, and Dataset Curation (Months 1-4)

This foundational phase focuses on deeply understanding MoFA RI's needs, establishing ethical boundaries, and beginning the critical task of data collection and annotation.

- **Activities:**

1. **Stakeholder Engagement and Needs Analysis:**

- Conduct semi-structured interviews and focus group discussions with key personnel from MoFA RI, including representatives from the Directorate General of Information and Public Diplomacy (Ditjen IDP), the Foreign Policy Strategy Agency (BSKLN), relevant geographic and thematic desks, and potentially diplomats stationed abroad.
- The aim is to understand their current public diplomacy workflows, information analysis challenges, specific types of insights desired, key topics/issues of interest, and expectations from an AI-powered system.

2. **Ethical Framework and Governance Protocol Development:**

- In consultation with legal and ethical experts, and MoFA RI representatives, develop a preliminary ethical framework and data governance protocol for the project. This will address data privacy, bias mitigation, responsible use, and security, drawing from the risks identified in Table 4.1.

3. **Data Source Identification and Access Strategy:**

- Finalize the list of specific social media sources, news outlets, blogs, and forums for data collection based on stakeholder input and relevance to Indonesian foreign policy.
- Investigate and secure access methods (APIs, permissions for scraping) in compliance with terms of service and ethical guidelines.

4. **Annotation Guideline Development:**

- Develop comprehensive annotation guidelines for sentiment (including nuanced diplomatic sentiment categories) and narrative elements (key

actors, themes, claims, frames) in both Bahasa Indonesia and English diplomatic text. These guidelines will be refined iteratively.

5. **Initial Data Collection and Corpus Creation:**

- Begin collecting an initial corpus of raw data from the identified sources using defined keywords, accounts, and timeframes.
- Recruit and train a small team of annotators based on the developed guidelines.

6. **Pilot Annotation and Guideline Refinement:**

- Conduct a pilot annotation round on a subset of the collected data.
- Calculate inter-annotator agreement (IAA) and refine annotation guidelines and annotator training based on discrepancies and feedback to ensure high-quality, consistent annotations.

- **Deliverables:** Needs assessment report; Draft ethical framework and data governance protocol; List of data sources and access plan; Finalized annotation guidelines; Initial raw data corpus; Report on pilot annotation and IAA.

5.2. Phase 2: Model Development, Adaptation, and Fine-tuning (Months 5-10)

This phase focuses on the technical development of the core AI engine, experimenting with various NLP models and fine-tuning them on the curated dataset.

- **Activities:**

1. **Continued Data Annotation and Corpus Expansion:** Continue the annotation process to build a sufficiently large and diverse labeled dataset for training and evaluation.
2. **Baseline Model Implementation:**
 - Implement and evaluate baseline sentiment analysis models (e.g., VADER for social media, pre-trained IndoBERT/XLM-R fine-tuned on general Indonesian sentiment datasets like NusaX or SmSA¹²) to establish performance benchmarks.
3. **Advanced Model Development and Fine-tuning:**
 - Fine-tune advanced transformer models (IndoBERT, XLM-R) on the custom-annotated diplomatic corpus for both sentiment analysis and as a foundation for narrative detection components (e.g., NER, topic modeling).
 - Explore and adapt architectures inspired by frameworks like FewTopNER for integrated narrative and entity analysis, focusing on its applicability to low-resource Bahasa Indonesia and the diplomatic domain.³⁶
 - Develop and integrate modules for topic modeling (e.g., LDA, neural topic models) and event detection.
4. **Addressing Linguistic Challenges:**
 - Develop and test strategies for handling code-switching in Bahasa Indonesia-English text.
 - Investigate techniques to improve model robustness to informal language,

slang, and the nuances of diplomatic speech.

5. Iterative Evaluation and Refinement:

- Rigorously evaluate model performance using appropriate metrics (e.g., F1-score, accuracy for sentiment; coherence, perplexity for topic models; precision/recall for NER/event detection) on a held-out test set from the annotated corpus.
- Iteratively refine model architectures, hyperparameters, and training strategies based on evaluation results.
- **Deliverables:** Expanded annotated diplomatic corpus; Report on baseline model performance; Developed and fine-tuned sentiment analysis and narrative detection models; Report on model evaluation and iterative refinements; Documented strategies for handling linguistic challenges.

5.3. Phase 3: System Prototyping, User Interface (UI) Development, and Evaluation with MoFA RI Use Cases (Months 11-15)

This phase involves building a functional prototype of the AI system and evaluating its utility with end-users from MoFA RI.

- **Activities:**
 1. **Prototype System Architecture Design:** Design the overall architecture of the AI system, including data ingestion, preprocessing, AI engine, database, and API for the UI.
 2. **Backend Development:** Develop the backend infrastructure to support the AI models and data processing.
 3. **Dashboard and UI/UX Design and Development:**
 - Design a user-friendly dashboard for visualizing insights (sentiment trends, narrative maps, influencer identification) based on feedback from Phase 1.
 - Develop the front-end UI, focusing on intuitiveness and actionable presentation of information.
 4. **Integration of AI Modules into Prototype:** Integrate the developed sentiment analysis and narrative detection modules into the backend system.
 5. **Pilot Testing and User Feedback Collection:**
 - Conduct pilot testing of the prototype with a selected group of MoFA RI users (e.g., from Ditjen IDP, BSKLN).
 - Develop realistic use case scenarios (e.g., analyzing public reaction to a recent diplomatic statement, tracking narratives around an ongoing international event, assessing the impact of a public diplomacy campaign).
 - Gather detailed user feedback on the system's functionality, usability, relevance of insights, and areas for improvement through surveys, interviews, and observation.
 6. **Iterative Prototype Refinement:** Refine the prototype (both backend models and frontend UI) based on user feedback and evaluation results.
- **Deliverables:** System architecture document; Functional prototype of the AI framework

with dashboard; Use case scenarios for testing; User feedback report; Refined prototype based on feedback.

5.4. Phase 4: Ethical Review, Impact Assessment, Final Reporting, and Dissemination (Months 16-18)

The final phase focuses on a comprehensive review of the system, assessing its potential impact, and documenting the entire research process.

- **Activities:**
 1. **Comprehensive Ethical Review:** Conduct a thorough ethical review of the refined prototype and its potential deployment implications, involving ethical and legal experts, and MoFA RI stakeholders. Finalize the ethical guidelines for system use.
 2. **Impact Assessment:**
 - Qualitatively assess the potential impact of the AI system on MoFA RI's public diplomacy effectiveness based on pilot testing and user feedback.
 - If feasible, attempt to define metrics for quantitative assessment in a future operational setting.
 3. **Thesis Writing and Documentation:**
 - Write the final PhD thesis, comprehensively documenting the research methodology, literature review, framework design, model development, evaluation results, ethical considerations, and conclusions.
 - Prepare detailed technical documentation for the prototype system.
 4. **Development of Guidelines for Responsible Use:** Develop a set of guidelines for MoFA RI on the responsible and effective use of the AI system, emphasizing human oversight and critical interpretation of outputs.
 5. **Dissemination of Findings:** Prepare academic publications and presentations to disseminate the research findings to the broader academic and diplomatic communities.
- **Deliverables:** Final ethical review report and guidelines for responsible use; Impact assessment report; Completed PhD thesis; Technical documentation for the prototype; Academic publications/presentations.

5.5. Tentative Timeline

A detailed Gantt chart would be included in a formal proposal, but a summary is:

- **Months 1-4:** Phase 1 (Requirements, Ethics, Dataset Curation)
- **Months 5-10:** Phase 2 (Model Development and Fine-tuning)
- **Months 11-15:** Phase 3 (System Prototyping and User Evaluation)
- **Months 16-18:** Phase 4 (Ethical Review, Impact Assessment, Final Reporting)

This phased approach allows for iterative development, continuous feedback, and rigorous evaluation, ensuring that the final framework is both technically sound and practically relevant to the needs of MoFA RI.

Chapter 6: Conclusion and Future Directions

6.1. Summary of the Proposed Research

This thesis proposal has outlined a research endeavor to design, prototype, and evaluate an Artificial Intelligence-powered framework aimed at enhancing the public diplomacy capabilities of the Ministry of Foreign Affairs of the Republic of Indonesia (MoFA RI). The core problem addressed is the challenge MoFA RI faces in effectively monitoring, understanding, and responding to the voluminous and dynamic global information landscape, particularly concerning public sentiment and narratives related to Indonesia and its foreign policies. The proposed solution involves leveraging Natural Language Processing (NLP) techniques—specifically sentiment analysis and narrative detection—to analyze publicly available online data in Bahasa Indonesia and English. Key objectives include understanding MoFA RI's specific needs, adapting SOTA NLP models for the low-resource context of Bahasa Indonesia within the diplomatic domain, curating a domain-specific annotated dataset, developing AI modules for analysis, and designing a user-centric interface for delivering actionable insights to diplomats.

A significant emphasis is placed on the novelty of this work in addressing the under-researched area of NLP for Bahasa Indonesia in the specialized field of diplomacy. The research aims to contribute not only a practical tool for MoFA RI but also advancements to the SOTA in low-resource NLP and AI for diplomacy, alongside a robust ethical framework for governmental AI use. The human-AI collaboration model is central, ensuring that technology augments rather than replaces the invaluable expertise of human diplomats.

6.2. Broader Implications for AI in Diplomacy in Indonesia and the Global South

The significance of this research extends beyond its immediate application within MoFA RI. It carries broader implications for the adoption and development of AI in diplomacy, particularly for Indonesia as a whole and for other nations in the Global South.

Firstly, this project can serve as a **pathfinder for other Indonesian government agencies** looking to incorporate AI into their public administration and communication strategies. The methodologies developed for handling Bahasa Indonesia, curating domain-specific datasets, and navigating ethical considerations can provide a valuable blueprint.

Secondly, for **countries in the Global South**, many of which face similar challenges of operating with "low-resource" languages (in NLP terms) and may have limited indigenous AI development capacity, this research offers a potential model. It demonstrates that it is feasible to develop tailored AI solutions that address specific national needs, rather than solely relying on off-the-shelf systems from major AI powers, which may not be optimized for local languages, cultural contexts, or national priorities.² This fosters a degree of **digital sovereignty and empowers nations to build AI tools that reflect their own perspectives and interests**. The development of such AI capabilities can help Global South countries to more effectively articulate their narratives on the international stage and counter potentially

biased representations that may emanate from dominant global information flows.¹

Thirdly, the experience gained by MoFA RI in developing and utilizing such an AI system can inform **Indonesia's broader national AI strategy and its participation in global AI governance discussions**. As AI becomes increasingly intertwined with international relations and power dynamics², nations like Indonesia have a vested interest in shaping the norms and standards that will govern its use. This research can provide practical insights into the benefits, challenges, and ethical guardrails needed for AI in the public sector, strengthening Indonesia's voice in international forums on AI ethics and regulation.

Ultimately, by fostering indigenous AI capabilities and promoting a human-centric, ethically grounded approach, this research contributes to a more equitable and representative global AI landscape, where technology serves diverse national interests and supports more effective and nuanced international engagement.

6.3. Avenues for Future Research and Development

While this thesis aims to deliver a significant contribution, it also opens up numerous avenues for future research and development, building upon the foundation laid by this work:

1. Expansion to Additional Languages:

- Future iterations could expand the linguistic capabilities of the system to include other languages of strategic importance to Indonesian diplomacy, such as key ASEAN languages, Arabic, Mandarin, or languages of major trading partners. This would require similar efforts in dataset curation and model adaptation for those languages.

2. Advanced Narrative Analysis:

- Delve deeper into computational narrative analysis, exploring techniques to identify not just topics and themes but also specific narrative frames, rhetorical strategies, persuasion techniques, and the subtle markers of coordinated inauthentic behavior or sophisticated disinformation campaigns.¹⁰

3. Predictive Capabilities:

- Explore the integration of predictive analytics to forecast potential shifts in public opinion, the likely trajectory of emerging narratives, or even early warnings of diplomatic crises or reputational threats with greater accuracy.² This would require longitudinal data and more complex modeling.

4. Integration with AI-driven Content Generation (with caution):

- While this research focuses on analysis, future work could cautiously explore how AI might assist in drafting initial communication materials (e.g., social media posts, FAQs) based on identified narratives and sentiment. However, this must be approached with extreme caution due to the risks of generic or inappropriate AI-generated content, emphasizing human review and control.¹

5. Multimodal Analysis:

- Extend the analysis beyond text to include visual content (images, videos) and audio data, which play an increasingly important role in online narratives and public diplomacy.

6. Longitudinal Impact Studies:

- Conduct long-term studies to assess the sustained impact of such AI systems on diplomatic practices, decision-making quality, and the actual outcomes of public diplomacy initiatives within MoFA RI.

7. Exploring Local Indonesian Languages for Nuanced Public Diplomacy:

- Investigate the potential for developing NLP tools to analyze sentiment and narratives expressed in major regional Indonesian languages (building on resources like NusaX¹²). This could support more nuanced public diplomacy efforts aimed at specific diaspora communities or leveraging Indonesia's internal cultural diversity in its international messaging.

8. Cross-Cultural Sentiment and Narrative Modeling:

- Research into how sentiment and narratives are expressed and perceived differently across cultures, and how AI models can be made more culturally aware and sensitive.

9. Enhanced Explainability and Trustworthiness:

- Continue research into XAI techniques to make the AI system's reasoning more transparent and understandable to diplomats, thereby increasing trust and facilitating more effective human-AI collaboration.

This proposed research represents a foundational step towards a more AI-augmented future for Indonesian public diplomacy. The continued exploration of these and other avenues will be crucial for MoFA RI to maintain its effectiveness and advance Indonesia's interests in an increasingly complex and digitally mediated world.

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