



AUTOMATED MULTILINGUAL DOCUMENT TRANSLATION USING UIPATH: A NO-API APPROACH

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Abstract: With growing interdependence among countries, there is an acute need for cross-lingual communication to bring people together around the globe. This paper presents the design and testing of an automated multilingual document translation system built entirely within UiPath Studio, a leading Robotic Process Automation (RPA) platform, without relying on external translation APIs. The proposed architecture combines UiPath's Document Understanding, Optical Character Recognition, and native automation activities to read, extract, and translate text from multilingual documents while preserving structure and formatting. Eliminating third-party API dependence yields faster processing, more uniform translation quality, and stronger data privacy. Following an applied, experimental research design, the workflow was tested across Hindi, Marathi, French, Tamil, and Telugu. Results indicate that translation tasks can be automated with minimal human intervention while retaining document structure and reasonable accuracy, and that the resulting interface is usable by both technical and non-technical users. The findings position UiPath as a secure, scalable, and cost-effective tool for automated multilingual document translation, and as a viable contributor to bridging language barriers in the digital era.

Index Terms — UiPath, Language Translation, Robotic Process Automation, Workflow Automation, Document Understanding, No-API Translation.

I. INTRODUCTION

Document translation is the process of rendering printed or digital content from one language into another while preserving accuracy, tone, and structure. It underpins the exchange of legal, academic, technical, and business information across linguistic boundaries and is central to global collaboration in a world of nearly 7,000 languages. India's own bilingual and multilingual reality — 22 major languages and hundreds of dialects — makes translation a basic requirement for everyday communication, administration, and education.

Technological innovation has reshaped document translation, moving it from purely manual, human-mediated work toward AI-assisted and automated pipelines. Neural Machine Translation (NMT) engines such as Google Translate, Microsoft Translator, and DeepL, along with Robotic Process Automation (RPA) platforms such as UiPath, now allow high volumes of multilingual content to be processed with reduced manual effort. However, most automated pipelines still depend on cloud-based translation APIs, which

introduce recurring costs, integration overhead, connectivity dependence, and data-privacy risk when sensitive documents are transmitted to third-party services.

This research investigates whether UiPath Studio, using only its native activities — Document Understanding, OCR, and inbuilt GenAI/translation activities — can deliver an automated, end-to-end multilingual document translation workflow without dependence on external APIs. The objective is to demonstrate a workflow that is cost-effective, secure, scalable, and usable by both technical and non-technical users, while maintaining acceptable translation accuracy and preserving the structure of the source document.

II. LITERATURE REVIEW

Automated and AI-assisted translation has been studied extensively in recent years, with research converging on similar themes: rising translation quality, persistent cultural and contextual limitations, and the growing role of workflow automation.

Nandasara et al. examined the societal opportunities and impact of automated translation, noting that an effective translator or translation system must be sensitive to culture, customs, and tradition to avoid distorting the source text; their evaluation of Russian–English translation using Google Translate and Facebook Translator identified recurring errors such as omissions, inadequate translations, and incorrect word order.

Dirghangi et al. investigated an Encoder–Decoder Neural Machine Translation system for English–Bengali translation, showing that AI can process whole-sentence context in a manner comparable to human translation, while also noting persistent weaknesses around cultural nuance and imperfect accuracy compared with human translators.

Gundapuneni et al. evaluated a multi-modal translation pipeline combining Transformers, the Google Translate API, Automatic Speech Recognition, and OCR, built on a Multilingual T5 (MT5) model that achieved 99.5% accuracy on its test set, while still reporting difficulty distinguishing closely related languages such as Urdu and Hindi.

Singh et al. proposed a machine-learning translation approach emphasizing semantic comprehension and originality rather than direct word-for-word conversion, describing a standard translation-system pipeline of data collection, pre-processing, model training, deployment, and evaluation using metrics such as the BLEU score and human evaluation.

Jadhav et al. developed a web-based Automated Language Translation System using JavaScript and Natural Language Processing, aimed at students, travelers, and healthcare professionals, and designed to translate full sentences and paragraphs — rather than isolated words — to preserve context and meaning across English, Hindi, French, Spanish, German, and Telugu.

Collectively, this literature establishes that automated translation systems are steadily improving in accuracy and contextual awareness, but remain dependent on external APIs and cloud services, motivating the present study's focus on a no-API, RPA-based alternative.

III. RESEARCH METHODOLOGY

This study follows an applied, design-and-experimental research methodology, emphasizing the practical construction and evaluation of an automated translation workflow rather than purely theoretical analysis.

A. Research Statement

A study on automated multilingual document translation using UiPath: a no-API approach.

B. Sampling Design

- Sample input documents: a set of English-language PDFs of varying length and content type (formal letters, reports, and articles) selected through convenience sampling.
- Languages tested: Hindi, Marathi, French, Tamil, and Telugu.

C. Data Collection

- Primary data: final translated documents generated by the UiPath workflow.
- Secondary data: reference translations from web-based tools (e.g., Google Translate), used to cross-check the correctness of the UiPath output.

D. Objectives

- To design and develop an automated, no-API translation workflow in UiPath Studio.
- To implement a simple, user-friendly interface for technical and non-technical users.
- To evaluate the efficiency and accuracy of the automated translation process.
- To reduce the extent of human intervention required in document translation.

E. Scope and Limitations

The study is limited to translation of text-based PDF files (excluding scanned images), a small set of target languages, and output verification by comparison with standard translation applications. Translation accuracy varies by language pair, only text-readable documents can be processed, the no-API method may constrain access to more advanced neural parameters, and the small sample of documents and languages may not capture all real-world use cases.

IV. UIPATH-BASED TRANSLATION FRAMEWORK

UiPath is an enterprise RPA platform offering an end-to-end automation lifecycle — process design, deployment, monitoring, and governance — through a low-code, drag-and-drop interface in UiPath Studio. Its Document Understanding framework combines RPA, OCR, and AI to process both structured and unstructured documents, making it well suited to a translation pipeline that must read, interpret, and reformat multilingual text with minimal manual effort.

A. Workflow Architecture

The proposed no-API translation workflow consists of six stages, implemented in UiPath Studio using the Document Processing, Document Understanding, PDF, and Word Activities packages:

- Input Document Selection — the source PDF is imported using the Extract With PDF activity.
- Text Extraction — OCR-based extraction retrieves the document's text while preserving paragraph and line structure, stored in a source-text variable.
- Language Detection — the source language is identified, either automatically or via a specified default, to correctly configure the translation step.
- Translation — the extracted text is passed to UiPath's inbuilt Translate Text to Target Language (GenAI) activity, which performs the language conversion locally within the UiPath environment rather than through an external cloud API, and stores the result in a translated-text variable.

- Output Generation — a Word Application Scope opens a target document, and the Append Text activity writes the translated content into it, preserving the source formatting as closely as possible.
- Verification and Export — the translated content is displayed for a quick quality check (via a Message Box) and exported as a PDF to a designated output folder, enabling traceability of every run.

Because the translation step relies on UiPath's native activities rather than a paid third-party API, the pipeline avoids recurring subscription costs, external network calls for sensitive content, and API-specific integration overhead, while still benefiting from UiPath's orchestration, logging, and error-handling capabilities.

B. Advantages of the Approach

- No-code automation: complex translation logic is built visually, without requiring advanced programming skills.
- Cost-effectiveness: offline/native processing avoids recurring API or subscription charges.
- Time efficiency: large documents are processed automatically rather than manually, substantially reducing turnaround time.
- Consistency: terminology, tone, and structure remain uniform across documents, reducing human error.
- Scalability: the same workflow can process large batches of documents across multiple languages.
- Security and privacy: local processing minimizes exposure of sensitive documents to third-party services.
- Reusability: once built, the workflow can be adapted for other document types or language pairs.

C. Challenges and Limitations

- OCR accuracy degrades on handwritten, low-quality, or image-heavy documents, which in turn affects translation quality.
- Offline/native translation techniques can struggle to capture idiomatic expressions and culturally specific phrasing.
- Preserving complex formatting (multi-column layouts, tables, embedded images) during translation remains difficult.
- Performance depends on local system configuration, including OCR engine settings and installed language packs.
- Large workflows can encounter exceptions or timeouts that require additional debugging and testing.
- Unlike cloud APIs, the workflow does not provide real-time, machine-learning-driven quality feedback.

V. RESULTS AND DISCUSSION

The workflow was implemented in UiPath Studio using the DocumentProcessing.Contracts, DocumentUnderstanding.Activities, IntegrationService.Activities, PDF.Activities, System.Activities, UIAutomation.Activities, and Word.Activities packages. Sample English-language PDF documents were processed through the pipeline and translated into Hindi, Marathi, French, Tamil, and Telugu.

Across the tested language pairs, the workflow successfully extracted source text via OCR, translated it using UiPath's native translation activity, and exported a formatted output document without manual intervention beyond initial file selection. Cross-checking the translated output against reference translations from a widely used web-based tool showed broadly consistent meaning and terminology, with expected minor variation for language pairs involving greater grammatical or script divergence from English (e.g., Tamil and Telugu). Document structure — paragraph breaks and general layout — was preserved in the majority of test cases, though documents with complex multi-column layouts or embedded images required closer manual review of the output.

These results support the study's core premise: a no-API, RPA-driven translation pipeline can deliver reasonably accurate, structurally faithful translations while removing the cost, connectivity, and data-privacy concerns associated with cloud translation APIs. The workflow also demonstrated the intended usability goal — non-technical users can trigger and monitor translation runs through UiPath Assistant without needing to understand the underlying automation logic.

VI. CONCLUSION

This research set out to show how automation can make document translation faster, more secure, and more reliable by designing a complete, end-to-end workflow within UiPath Studio that requires no external translation API. The system combines document processing, OCR, and native translation logic to extract, translate, and reproduce multilingual text while keeping sensitive data within the local environment, reducing both cost and dependence on third-party services. Testing across five languages — Hindi, Marathi, French, Tamil, and Telugu — indicates that the approach can achieve acceptable translation accuracy and consistency while substantially reducing manual effort, and that it remains accessible to non-technical users through UiPath Assistant.

The present system is limited by OCR inaccuracies, constrained contextual understanding, and difficulty with complex document layouts. Future iterations could address these limitations through the integration of local neural translation models, improved OCR engines, and reusable custom components for formatting retention. Overall, the study positions UiPath as a viable enabler of intelligent, no-API document translation automation, with applicability extending beyond this study into education, healthcare, finance, and government contexts that require secure, scalable, cross-language communication.

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