METHODOLOGY

SO4 – Identification and Classification of Types of Translation Errors in Itaukei Translations Generated by LLMs and NMT Systems.

This study employs a comparative, mixed-methods error analysis to identify and classify translation errors in iTaukei translations generated by Large Language Models (LLMs) and Neural Machine Translation (NMT) systems. The approach combines systematic comparison with human reference translations and structured qualitative analysis to capture both linguistic and cultural inaccuracies.

1. Data Selection

Utilization of the dataset created via SO2

2. Error Taxonomy

Translation errors are identified and classified using a predefined taxonomy adapted to the linguistic and cultural characteristics of the iTaukei language. The main error categories include:

- **Lexical errors:** incorrect word choice, mistranslation of terms, or omission/addition of key lexical items
- **Syntactic errors:** incorrect word order, missing grammatical elements, or malformed sentence structures
- **Pragmatic errors:** inappropriate register, loss of discourse meaning, or incorrect handling of context-dependent expressions
- **Cultural errors:** mistranslation or loss of culturally embedded concepts, idioms, kinship terms, or metaphors

Each error is also assigned a **severity level** (minor, major, or critical) based on its impact on meaning and communicative adequacy.

3. Error Identification Procedure

Machine-generated translations are compared against the human reference translations to identify deviations in meaning, structure, and cultural interpretation. For each translation, evaluators determine:

1. Whether an error is present
2. The category (or categories) of error involved
3. The severity of the error

To reduce bias, translations are assessed independently of system identity, and consistent decision rules are applied across all evaluations.

4. Reliability and Validation

To ensure reliability, a subset of the data is independently annotated by multiple evaluators with proficiency in iTaukei and English. Inter-annotator agreement is calculated to assess consistency in error classification. Disagreements are resolved through discussion or adjudication, producing a final validated set of error labels.

5. Analysis

The frequency and distribution of error types are analysed across:

- Translation systems (LLMs vs NMTs)
- Translation direction
- Domains and sentence types

This analysis highlights systematic strengths and weaknesses of each approach and reveals patterns specific to the iTaukei language.

6. Outcome

The results provide a detailed linguistic and cultural profile of machine translation errors for iTaukei, offering empirical evidence of where current LLM and NMT systems succeed or fail. These findings directly inform subsequent evaluation, harmonisation strategies, and recommendations for improving machine translation for indigenous and low-resource languages.