CSE-443

Natural Language Processing

Group 6

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Problem Statement

- Converting morphological paradigms for three languages into Apertium format to build an FST-based morphological analyzer/generator, and evaluation of the Apertium-based morphological analyzer/generator

- The three Indian Languages chosen for this project were - Bhojpuri(already completed)**, Magahi, and Maithili**

What is Apertium?

- Apertium is a rule-based machine translation system that was created in the project OpenTrad in 2004.

- A machine translation system is used to translate text from one language to another.

- It uses finite state transducers [FSTs] for all of its lexical transformations.

Rule-based Machine Translation (RBMT)

- Rule-based machine translation (RBMT) is an approach to machine translation that relies on explicitly defined linguistic rules and structures to translate text from one language to another.

- Broadly speaking, it involves the following process:

1) Rule formation
2) Constructing dictionaries from morphological paradigms
3) Morphological Analysis
4) Transfer
5) Morphological Generation

Resources Used

- Apertium framework
- Lt-toolbox
- Python 3.10
- Pycharm

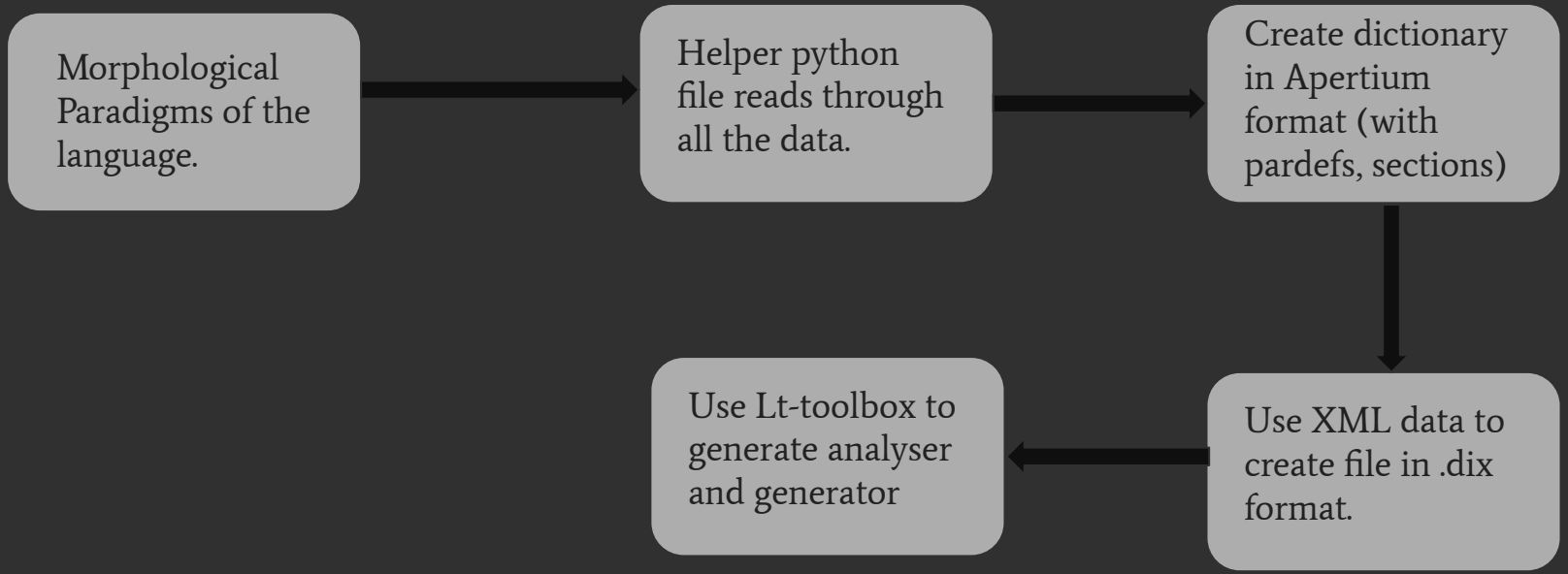
Project Workflow

- We use the morphological paradigms of the language to construct dictionaries in the Apertium format.

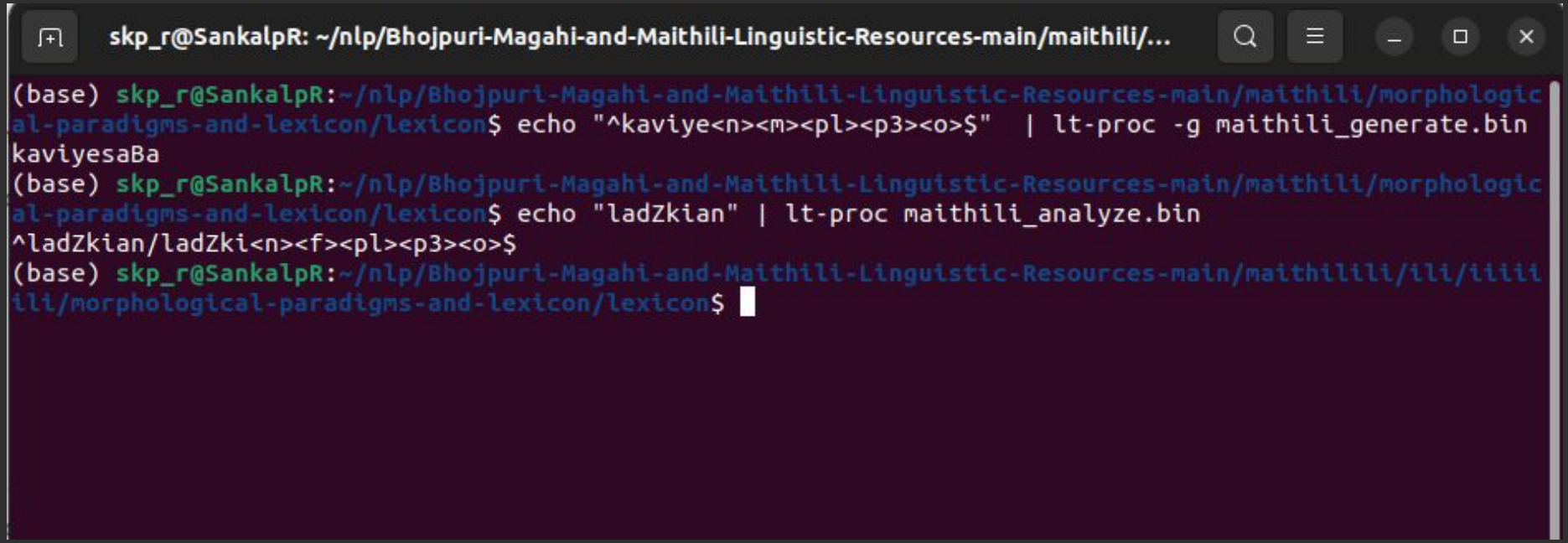
- Once converted into the Apertium format, we can use the Lt-toolbox to generate the morphological analyzer and morphological generator from the constructed dictionary.

- We read, and construct the dictionary by reading all the morphological paradigms using a helper file (python script), and convert the XML data into .dix format to get the final dictionary in Apertium format.

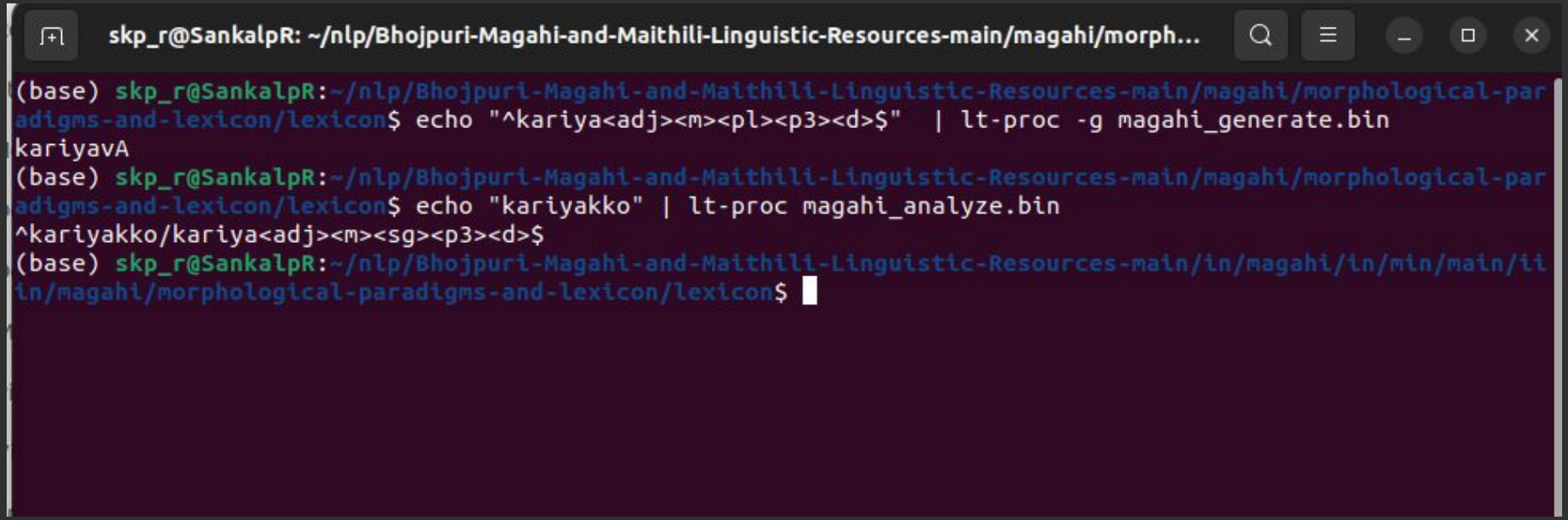
Workflow (cont.)



Maithili Morphological Analyzer and Generator



Magahi Morphological Analyzer and Generator



Thank You!!!

Members of Group-6,

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