

Automatic reporting for multiple sclerosis based on medical imaging and deep learning

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Summary

1. Explore the possibilities offered by the DICOM Structured Reporting standard format.
2. Choose the most adapted format & technology for report generation.
3. Implement a report generation mechanism into an end-to-end pipeline within hospital information systems.

Introduction

- This work lies in the context of a project called “**MSxplain**”, which goal is to work on the integration of Artificial Intelligence to assist diagnosis and treatment planning of **Multiple Sclerosis**.
- The field of **medical imaging** has advanced significantly with the integration of AI. Despite these remarkable achievements, a crucial challenge remains in effectively translating the outputs generated by algorithms into comprehensible **radiology structured reports**.
- One of the aims of this project is to create clear, concise & easy-to-understand reports that **summarize the findings** of the AI tools.

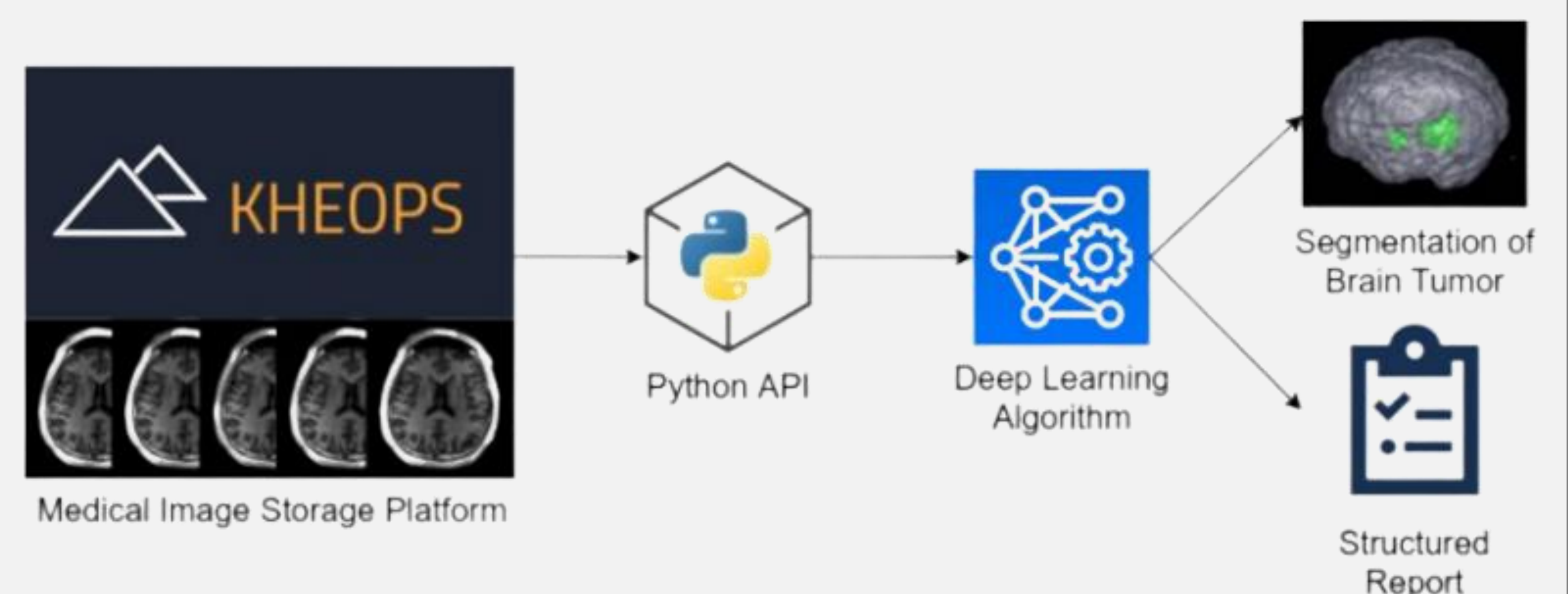
Methods

- Familiarization with the existing tools & software components.
- Discover and learn about the DICOM SR standard.
- Choose the most adapted format & technology for report generation.
- Implement a report generation mechanism.
- Test the report generation for multiple cases.

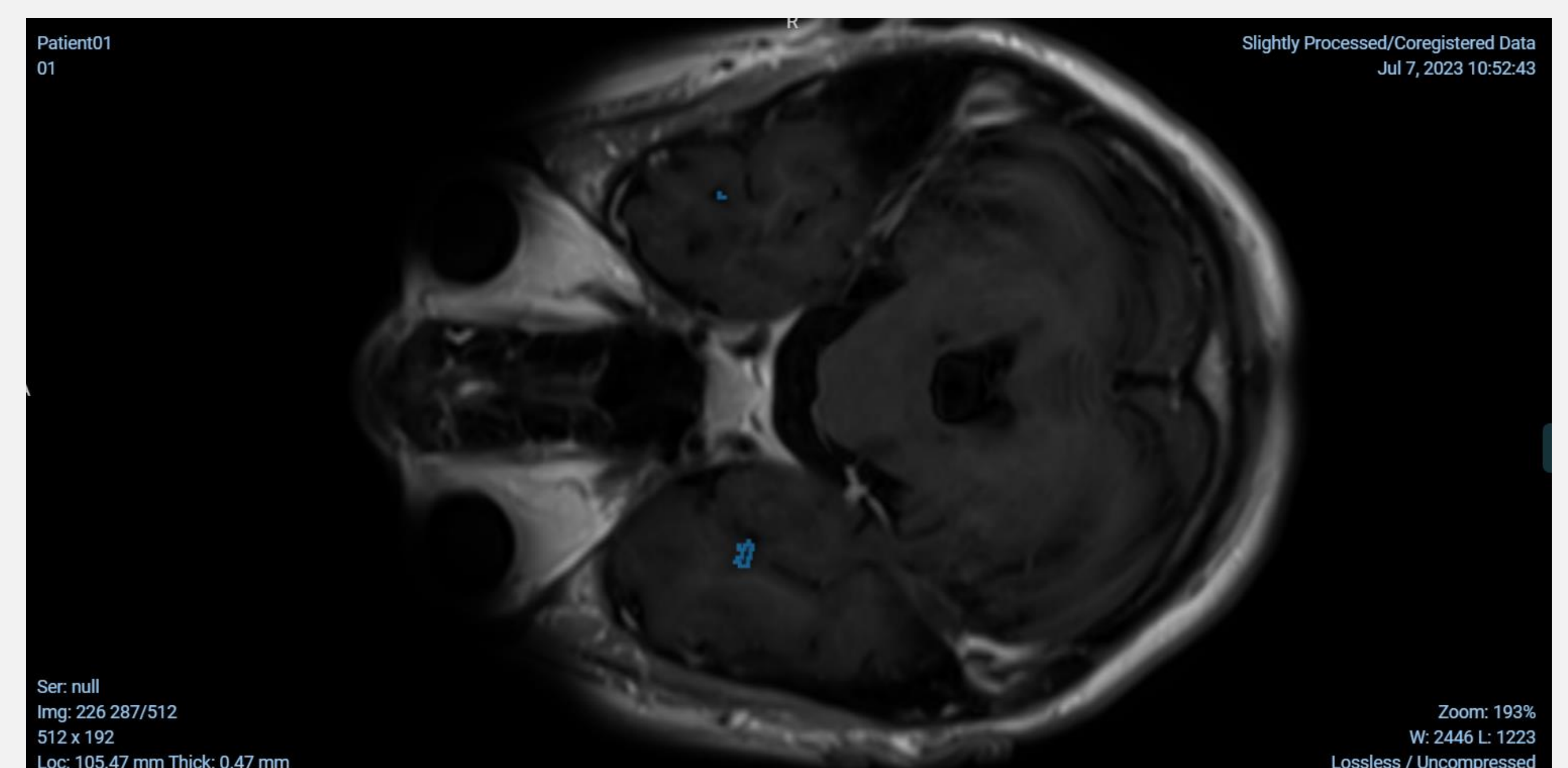
Conclusion

- This project represents an important step towards translating the outputs generated by algorithms into easily comprehensible radiology reports.
- By leveraging the DICOM SR standard and using an end-to-end pipeline, it enables the production of structured reports that improve the quality and accessibility of crucial medical information.

Results



- Output of White Matter Lesion (WML) segmentation:



- Corresponding Structured Report:

```
Volume (G-D705 - SRT)
CodeValue - G-D705
CodingSchemeDesignator - SRT
CodeMeaning - Volume
CodeValue - mm3
CodingSchemeDesignator - UCUM
CodingSchemeVersion - 1.4
CodeMeaning - Cubic millimeter
NumericValue - 2.1150001287460327
RelationshipType - CONTAINS
ValueType - NUM
```