Preliminary Results of 3D Slicer Localization to Portuguese and Spanish for the Latin American Biomedical Engineering Community
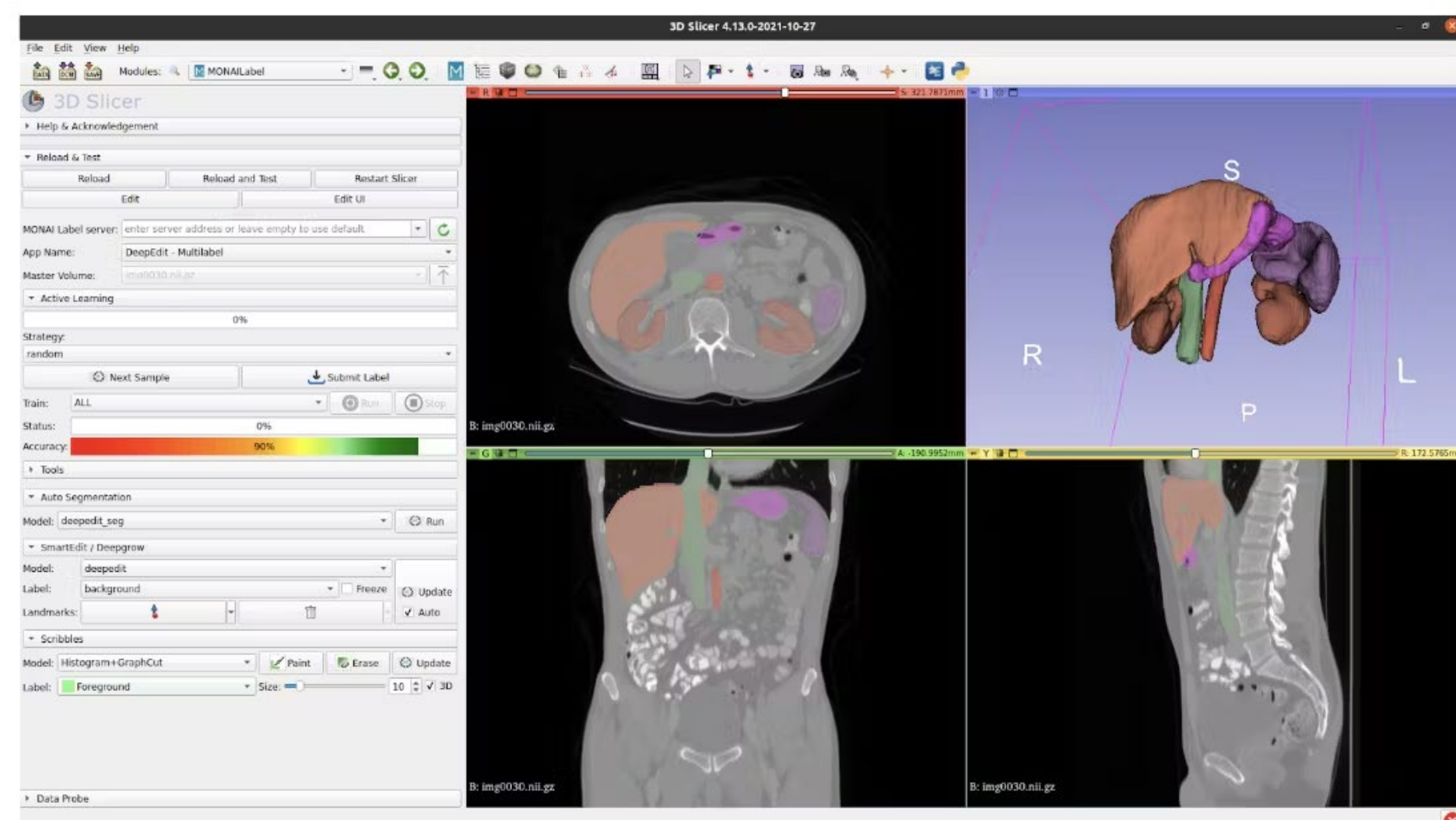
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INTRODUCTION

3D Slicer was initially developed in English, potentially limiting accessibility for researchers in non-English-speaking countries. 3D Slicer has increased its download rate in Latin America, reaching 55,526 in the last 4 years (June 2020 to May 2024). Figure 2 shows the distribution of downloads in countries. To facilitate access to the platform for biomedical researchers in Latin America, we have engaged in a localization effort to translate the user interface and documentation into Portuguese and Spanish. The paper presents our preliminary work on the localization of the 3D Slicer for Latin America.

Fig. 1: MONAI Label in 3D Slicer can automatically segment various anatomical structures from medical images, such as organs or tumors. This is particularly useful in radiology for tasks like spleen or pancreas segmentation using AI.

MATERIALS AND METHODS

We used the web-based 3D Slicer Weblate translation repository and the 3D Slicer Language Packs extension to localize the user interface elements of 3D Slicer to Brazilian Portuguese and Latin American Spanish [1,2]. Although text string extraction for translation is mostly automated, there are still visual string-checking steps in the workflow. Therefore, some strings in the source code must be carefully selected from the software code itself. Additionally, to provide a reference to end users unfamiliar with 3D Slicer terminology, we translated the 3D Slicer glossary of medical image computing terms [3]. Furthermore, we translated the documentation of the 3D Slicer Language Packs extension into both languages to facilitate access to the localized version of the software and enable contribution to future translation efforts.

Fig. 2: 3D Slicer downloads statistics throughout Latin America countries in the last 4 years, i.e., from June 2020 to May 2024.

RESULTS AND DISCUSSION

The translation of the 3D Slicer user interface to Portuguese and Spanish encompasses over 5,300 strings in each language. Figures 3 and 4 showcase the Volumes module of 3D Slicer translated into Portuguese and Spanish, respectively. We translated the documentation for the Slicer Language Packs extension and the 3D Slicer glossary and made them available on GitHub [3,4]. The initial project outcomes were presented at the 39th edition of the Slicer Project Week hackathon, where we received valuable feedback from the 3D Slicer community [5].
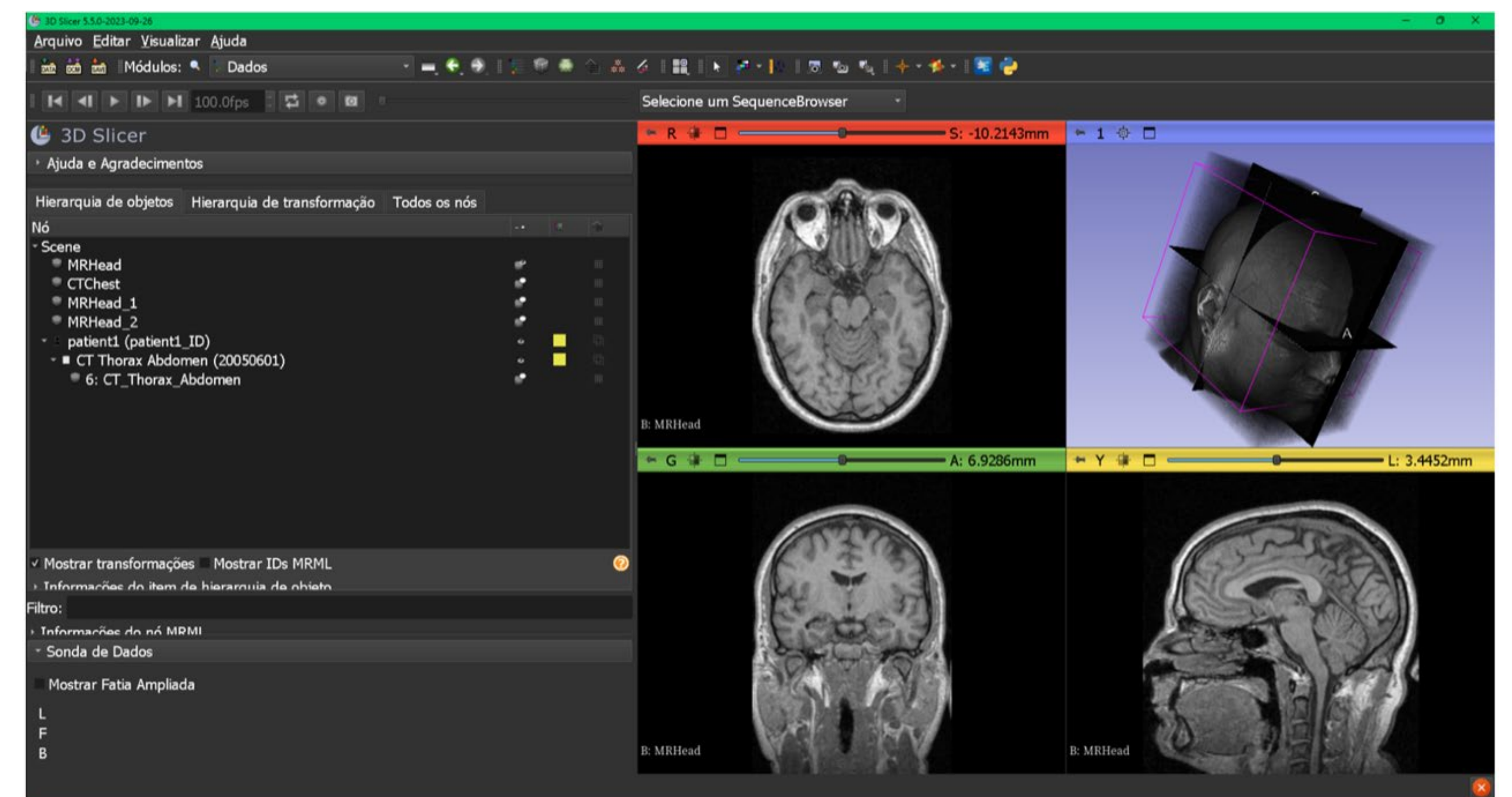

Fig. 3: Volumes module of 3D Slicer in Portuguese. The figure shows the software main menu (top) and the module graphical user interface (left) translated into Portuguese.
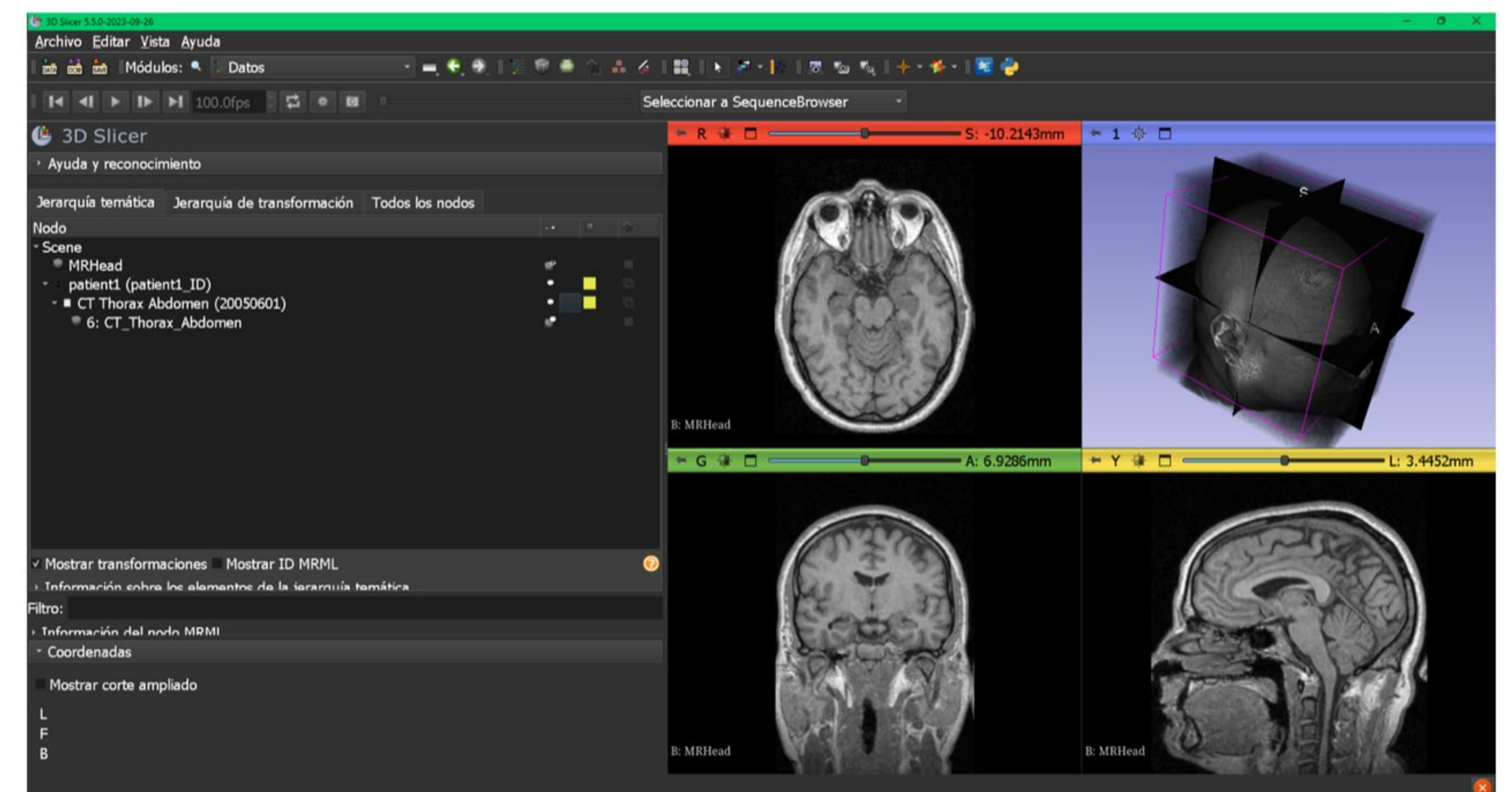

Fig. 4: Volumes module of 3D Slicer in Spanish. The figure shows the software main menu (top) and the module graphical user interface (left) translated into Spanish.

CONCLUSIONS

We have created the first localized version of 3D Slicer in Portuguese and Spanish for Latin America. This initiative enables researchers across the region to fully utilize the platform. Plans include maintaining these translations and expanding them to encompass additional modules and resources, fostering a more inclusive and collaborative research environment for the Latin American biomedical engineering community.

ACKNOWLEDGEMENTES

REFERENCES

1. 3D Slicer Language Packs Extension at https://github.com/Slicer/SlicerLanguagePacks
2. 3D Slicer Weblate at https://hosted.weblate.org/projects/3d-slicer/3dslicer/
3. Portuguese version of 3D Slicer Glossary at https://github.com/Slicer/SlicerLanguagePacks/blob/main/Glossary ptbr.md
4. Spanish version of 3D Slicer Glossary at https://github.com/Slicer/SlicerLanguagePacks/blob/main/Glossary es.md
5. 3D Slicer for Latin America project, 39th Slicer Project Week, June 24-28, 2022, Montreal, Canada at https://projectweek.na-mic.org/PW39_2023_Montreal/Projects/3DSlicerForLatinAmerica/