MIALab: Registration

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Abstract—The abstract goes here.

Index Terms—IEEE, IEEEtran, journal, LaTeX, paper, template.

I. Introduction

THIS demo file is intended to serve as a "starter file" for IEEE journal papers produced under LaTeX using IEEEtran.cls version 1.8b and later. We wish you the best of success.

A. Subsection Heading Here

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Fig. 1. The IEEE logo.

II. Materials and Methods

The materials and methods go here.

A. Methods Affine Registration

We used the implemented affine registration from the MIA pipeline. To get the optimal we implemented a basic grid search. We tested 6 different parameters, which we thought to have the most influence on the registration accuracy. Because there is also a difference between on the result between different patients we tested each parameter combination with ten patients.

We registered the naive image to the mni image of the same patient. The pseudocode how we implemented the gridsearch can be seen in figure 2. To evalutate the registration we calculated the dice.

III. Results

The results go here.

```
FOR EACH Setting of parameters

        FOR 10 patients
                Dice[White, Grey, Ventricles] = evaluate()

        SAVE mean Dice over the 10 patients

CHOOSE setting with highest Dice
```

Fig. 2. The pseudocode how we implemented the grid search.

A. Results Affine Registration

The dice after the affine registration can be seen in 3. It shows the three dices for 936 different parameter combinations tested on ten patients. The registration took approximatly 15.0 seconds with a standard deviation of 10.6. The mean of the grey matter is 0.50 and a standard deviation of 0.02, for the ventricles it is 0.47 ± 0.09, and for the white matter the mean is 0.62 and a standard deviation of 0.02. The results of the ventricles have the highest range, with a dice spanning from 0.04 to 0.65.
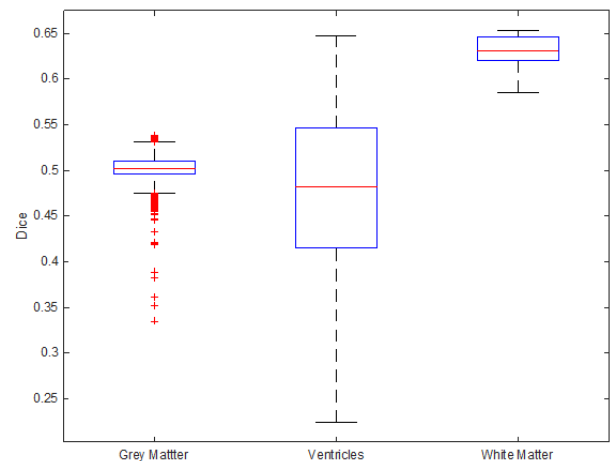

Fig. 3. The boxplot of the dice after the registration.

IV. Discussion

The discussion goes here.

V. Conclusion

The conclusion goes here.

Appendix A
Proof of the First Zonklar Equation

Appendix one text goes here.

Appendix B

Appendix two text goes here.