

Notes: Quantification of uncertainty in longitudinal segmentation

various authors at MMIV-ML

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1 Synopsis

🔧 TODO: Reformulate & simplify Iglesias et al. (2016) approach in terms of a hierarchic probability distribution.

2 Notes on Iglesias et al.'s paper [Luca]

Notes on Iglesias et al. (2016).

- The approximation on p. 545 left bottom can be very bad in high dimensions (MacKay 1996).
- Use of probabilistically-labelled nodes: doesn't this introduce a redundant set of variables?

Bibliography

("de X" is listed under D, "van X" under V, and so on, regardless of national conventions.)

Iglesias, J. E., Van Leemput, K., Augustinack, J., Insausti, R., Fischl, B., Reuter, M. (2016): *Bayesian longitudinal segmentation of hippocampal substructures in brain MRI using subject-specific atlases*. NeuroImage **141**, 542–555. doi:[10.1016/j.neuroimage.2016.07.020](https://doi.org/10.1016/j.neuroimage.2016.07.020).

MacKay, D. J. C. (1996): *Hyperparameters: optimize, or integrate out?* In: Heidbreder (1996): 43–59. <https://bayes.wustl.edu/MacKay/alpha.pdf>.

Heidbreder, G. R., ed. (1996): *Maximum Entropy and Bayesian Methods*. Santa Barbara, California, U.S.A., 1993. (Springer, Dordrecht). doi:[10.1007/978-94-015-8729-7](https://doi.org/10.1007/978-94-015-8729-7).