

Clinica



Clinica is a software platform for multimodal brain image analysis in clinical research studies. It makes it easy to apply advanced analysis tools to large scale clinical studies. For that purpose, it integrates a comprehensive set of processing tools for the main neuroimaging modalities: currently MRI (anatomical, functional, diffusion) and PET, in the future, EEG/MEG.

For each modality, Clinica allows to easily extract various types of features (regional measures, parametric maps, surfaces, curves, networks). Such features are then subsequently used as input of machine learning, statistical modeling, morphometry or network analysis methods.

References

- Routier, A., Guillon, J., Burgos, N., Samper-Gonzalez, J., Wen, J., Fontanella, S., Bottani, S., Jacquemont, T., Marcoux, A., Gori, P., Lu, P., Moreau, T., Bacci, M., Durrleman, S., Colliot, O. *Clinica: an open source software platform for reproducible clinical neuroscience studies*. In *OHBM* 2018. [Paper in PDF](#)
- Routier, A., Marcoux, A., Diaz Melo M., Guillon J., Samper-González J., Wen J., Bottani S., Guyot A., Thibaut-Sutre E., Teichmann M., Habert M-O, Durrleman S., Burgos N., Colliot O. *New Advances in the Clinica Software Platform for Clinical Neuroimaging Studies*. In *OHBM* 2019. [Paper in PDF](#)
- Routier, A., Marcoux, A., Diaz Melo M., Samper-González J., Wild A., Guyot A., Wen J., Thibaut-Sutre E., Bottani S., Durrleman S., Burgos N., Colliot O. *New Longitudinal and Deep Learning Pipelines in the Clinica Software Platform*. In *OHBM* 2020. [Paper in PDF](#)
- Samper-González J., Burgos N., Bottani S., Fontanella S., Lu P., Marcoux A., Routier A., Guillon J., Bacci M., Wen J., Bertrand A., Bertin H., Habert MO, Durrleman S., Evgeniou T., Colliot O. *Reproducible evaluation of classification methods in Alzheimer's disease: Framework and application to MRI and PET data*. *Neuroimage* 183: 504–521, 2018. [Paper in PDF](#)
- Wen J., Thibaut-Sutre E., Samper-González J., Routier A., Bottani S., Durrleman S., Burgos N., Colliot O. *Convolutional Neural Networks for Classification of Alzheimer's Disease: Overview and Reproducible Evaluation*, *Medical Image Analysis* 63: 101694, 2020. [Paper in PDF](#)
- Marcoux A., Burgos N., Bertrand A., Teichmann M., Routier A., Wen J., Samper-González J., Bottani S., Durrleman S., Habert M-O, Colliot O. *An Automated Pipeline for the Analysis of PET Data on the Cortical Surface*. *Frontiers in Neuroinformatics* 12, 2018. [Paper in PDF](#)

Deformetrica



Deformetrica is a software for the statistical analysis of 2D and 3D shape data. It essentially computes deformations of the 2D or 3D ambient space, which, in turn, warp any object embedded in this space, whether this object is a curve, a surface, a structured or unstructured set of points, or any combination of them.

References

- S. Durrleman, S., Prastawa, M., Charon, N., Korenberg, J.R., Joshi, S., Gerig, G., Trounev, A. *Morphometry of anatomical shape complexes with dense deformations and sparse parameters*. In *Neuroimage* 101(1): 35-49, 2014. [Paper in PDF](#)
- Bône, A., Louis, M., Martin, B., & Durrleman, S. *Deformetrica 4: an open-source software for statistical shape analysis*. In *International Workshop on Shape in Medical Imaging* Springer, Cham, 2018, p. 3-13. [Paper in PDF](#)

Brain network toolbox



FreeBorN
French Brain Networks

A list of MATLAB routines for characterizing brain network topology through graph theoretical indices can be found at the website of the FreeBorN consortium, which promotes the interaction and visibility of the research teams studying brain connectivity and network theory.

[Website](#)

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To come soon

References

- Schiratti J-B, Allasonniere S, Colliot O, Durrleman S. *A Bayesian mixed-effects model to learn trajectories of changes from repeated manifold-valued observations*. In *Journal of Machine Learning Research (JMLR)* 18(1), 4840-4872, 2017. [Paper in PDF](#)
- Koval I, Schiratti JB, Routier A, Bacci M, Colliot M, Allasonniere S, Durrleman S. *Spatiotemporal propagation of the cortical atrophy: population and individual patterns*. In *Frontiers in Neurology* 9, 2018. [Paper in PDF](#)