

Subject Section

Rethomics: an R framework to analyse high-throughput behavioural data

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Abstract

Motivation: Ethomics, a quantitative and high-throughput approach to ethology, is a novel and exciting field. The recent development of methods that automatically score variables in multiple animals provides an unprecedented insight into the study of behaviours. The analysis of ethomics data presents many challenges that are conceptually independent of the acquisition platform. However, there is, little effort in providing a general framework to analyse multiple and long behavioural time series. We developed the Rethomics framework, a suite of R packages that altogether provide utilities to: import, store, visualise and analyse behavioural data.

Availability and Implementation: All packages in the rethomics framework are available under the terms of the GPLv3 license. Exaustive installation instructions and tutorials are available at https://github.com/rethomics/ https://rethomics.github.io/.

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1 Introduction

$$\sum x + y = Z \tag{1}$$

2 Approach

3 Framework features

3.1 Data import

xxx xxxxx xxxx dwjdkl xxx xxxxx xxxx dwjdkl xxx xxxxx xxxx dwjdkl

3.2 Internal data structure

 $xxx\;xxxx\;xxxx\;dwjdkl\;xxx\;xxxx\;xxxx\;dwjdkl\;xxx\;xxxxx\;xxxx\;dwjdkl$

3.3 Circadian analysis

xxx xxxxx xxxx dwjdkl xxx xxxxx xxxx dwjdkl xxx xxxxx xxxx dwjdkl

3.4 Sleep scoring

xxx xxxxx xxxx dwjdkl xxx xxxxx xxxx dwjdkl xxx xxxxx xxxx dwjdkl

3.5 Visualisation

xxx xxxxx xxxx dwjdkl xxx xxxxx xxxx dwjdkl xxx xxxxx xxxx dwjdkl

4 Conclusion

xxx xxxxx xxxx dwjdkl xxx xxxxx xxxx dwjdkl

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2 Geissmann et al.

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References

Bofelli, F., Name2, Name3 (2003) Article title, *Journal Name*, **199**, 133-154. Bag, M., Name2, Name3 (2001) Article title, *Journal Name*, **99**, 33-54.

- Yoo,M.S. et al. (2003) Oxidative stress regulated genes in nigral dopaminergic neurnol cell: correlation with the known pathology in Parkinson's disease. *Brain Res. Mol. Brain Res.*, **110**(Suppl. 1), 76–84.

 Lehmann,E.L. (1986) Chapter title. *Book Title*. Vol. 1, 2nd edn. Springer-Verlag, New
- Crenshaw, B.,III, and Jones, W.B.,Jr (2003) The future of clinical cancer management: one tumor, one chip. *Bioinformatics*, doi:10.1093/bioinformatics/btn000.
- Auhtor, A.B. et al. (2000) Chapter title. In Smith, A.C. (ed.), Book Title, 2nd edn. Publisher, Location, Vol. 1, pp. ???–???.
- Bardet, G. (1920) Sur un syndrome d'obesite infantile avec polydactylie et retinite pigmentaire (contribution a l'etude des formes cliniques de l'obesite hypophysaire). PhD Thesis, name of institution, Paris, France.