

Improving data curation through FAIR assessment in the DataONE repository network

Jeanette Clark^{b,2}, Chris Beltz^b, Peter Slaughter^{a,b}, Ted Habermann^c, and Matthew B. Jones^{a,b}

^aDataONE, University of California Santa Barbara, Santa Barbara, CA; ^bNational Center for Ecological Analysis and Synthesis, University of California Santa Barbara, Santa Barbara, CA; ^cMetadata Game Changers, Boulder, CO

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fig : frog

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References

1. Belkin M, Niyogi P (2002) Using manifold structure for partially labeled classification. *Advances in Neural Information Processing Systems*, pp 929–936.
2. Bérard P, Besson G, Gallot S (1994) Embedding riemannian manifolds by their heat kernel. *Geometric & Functional Analysis GAFA* 4(4):373–398.
3. Coifman RR, et al. (2005) Geometric diffusions as a tool for harmonic analysis and structure definition of data: Diffusion maps. *Proceedings of the National Academy of Sciences of the United States of America* 102(21):7426–7431.