dilax: Differentiable Binned Likelihoods in JAX

Thursday 7 December 2023 10:00 (30 minutes)

dilax is a software package for statistical inference with binned likelihoods. It focusses on three key concepts: performance, differentiability, and object-oriented statistical model building. Thus, dilax is build upon the shoulders of a deep learning giant: JAX - a popular autodifferentiation Python framework. By making *every* component in dilax a PyTree, each component can be jit-compiled (jax.jit), vectorized (jax.vmap) and differentiated (jax.grad). This does not only fulfil all key concepts, but also enables novel computational concepts, such as running thousands of fits simultaneously on a GPU.

We present the key concepts of dilax, show its features, and discuss performance benchmarks with toy datasets.

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