

everwillow: model-agnostic statistical inference in pure JAX

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everwillow is a statistical inference library for high energy physics built on JAX pytrees. It is deliberately open-world: there is no model specification format and no assumption about where the likelihood comes from. Any negative log-likelihood written as a JAX function works, whether it comes from a binned template fit, an unbinned parametric model, or another JAX-based package, and everwillow supplies the inference around it: fitting with optimistix, bounded parameters via transformations, profiling, and hypothesis testing. Test statistics, sampling distributions, and calculators are independent components, so asymptotic and toy-based inference go through the same interface and the full pipeline is JIT-compileable and differentiable. The talk presents the library's design, benefits of a pure-JAX engine, and demonstrates typical inference workflows. It will also touch on ongoing work towards efficient exploration of multi-dimensional parameter spaces.

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