JuMP is a modeling interface and a collection of supporting packages for mathematical optimization that is embedded in Julia. With JuMP, users formulate various classes of optimization problems with easy-to-read code, and then solve these problems using state-of-the-art open-source and commercial solvers. JuMP also makes advanced optimization techniques easily accessible from a high-level language.

USE CASES

JuMP is used by a broad range of Operations Research practitioners to develop novel solutions to hard decision problems. As one example, it was used by a team from MIT that won the 2017 Boston Public Schools transportation challenge to develop better bus routes for public schools in Boston.

JuMP is used by governmental research organizations such as the National Renewable Energy Laboratory and the Los Alamos National Laboratory, as well as private companies such as Invenia and PSR to improve the efficiency and reliability of national power grids.

JuMP is widely used in academia for teaching and research at the undergraduate and graduate level. The user-friendly syntax makes it easy for beginners to solve their first model, while support for powerful features such as solver-independent callbacks allow experts to develop state-of-the-art algorithms.

PLANNED FEATURES

+ Improve the documentation and tutorials for a range of stakeholders. We need to make it easier for new users to write their first model in JuMP, for intermediate users to discover more advanced features of JuMP, and for expert users to understand how the internals of the code work so they can contribute back to the open-source development.

+ Release a 1.0 version. We are working towards a 1.0 release of JuMP that will serve as a commitment to API stability, and give risk-averse users the confidence that JuMP is no longer side-project in active development, but a mature piece of software they can rely on.

+ Revamp support for nonlinear programming. At present, JuMP's support for nonlinear programming is a second class citizen compared to linear and conic programming.

PROJECT NEEDS

Dedicated maintenance and community support engineer.	$100,000 per year
Support to rewrite JuMP's nonlinear interface	$100,000
Sponsor JuMP-dev workshops	20,000 per workshop

JUMP

For more information on JuMP!, including our governance structure and project roadmap, please visit

https://jump.dev/

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