

Fitting tails with the cvplot package

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Abstract

Extreme value theory provides models that enable extrapolation from observed levels of a process to unobserved levels. These models include power law, Pareto and Zipf distributions. By definition extreme values are scarce, hence the techniques used to fit the models are often under discussion and several approaches are needed. Over the last few years (2014, 2015 and 2016) the authors have contributed to developing new tools to identify the tail of a distribution based on the residual coefficient of variation, henceforth called CV-plot, which can be used at once for light and heavy tails. The CV-plot R package provides a methodology for data analysis simple and reliable. This package contains R functions for visualizing, fitting and validating the tails of distributions. The package also considers multiple threshold tests for a generalized Pareto distribution, together with an automatic threshold selection algorithm. One of the main contributions is to extend the methodology based on moments to all distributions, even without finite moments.