collapse and the *fastverse*: Advanced and Fast Statistics and Data Transformation in R

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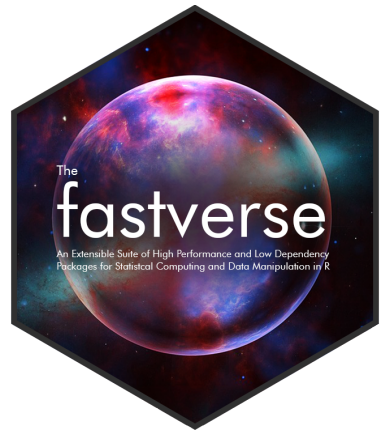
What is it

The *fastverse* (fastverse.org) is a suite of complementary high-performance packages for statistical computing and data manipulation in `R`. Packages have multiple developers. **Main Aims**:

- Speeding up `R` through heavy use of compiled (`C`/`C++`) code
- Enabling more complex statistical and data manipulation operations in `R`
- Reducing the number of dependencies required for advanced computing in `R`

The `fastverse` `R` package is a meta-package for easy package installation, loading and management.



fastverse Packages

Core Packages

- `collapse` (fastverse.org/collapse): Advanced and Fast Data Transformation
- `kit` (fastverse.org/kit): Data Manipulation Functions in C
- `data.table` (r-datatable.com): Enhanced Data Frame
- `magrittr` (magrittr.tidyverse.org): Efficient Pipe Operators and Aliases

Extension Packages by Group (N. Packages)

• Time Series (3) • Dates and Times (5) • Strings (3) • Statistics and Computing (19) • Spatial (10) • Visualization (7) • Data Manipulation in R Based on Faster Languages (2) • Data Input-Output, Serialization, and Larger-Than-Memory Processing (6) • Parallelization, High-Performance Computing and Out-Of-Memory Data (1+) • Compiling R (8) • R-like Data Manipulation in Faster Languages (2) • R Bindings to Faster Languages (7) • Tidyverse-like Data Manipulation built on `data.table` (7) • Tidyverse-like Data Manipulation built on `collapse` (2)

Outline of this Talk

- Brief introduction to `collapse` and `kit` using available documentation (Examples from the `collapse` article and the intro to kit vignette) (15 min).

- **Example 1:** Data curation for Felbermayr et al. (2025): *Tariffs Hit Differently: The Regional Impact of US tariffs across Europe and the Role of the Single Market* → Regionalized Inter-Country Input–Output (REICIO) Table covering 288 European NUTS2 regions and 47 non-EU countries in 10 NACE Sectors (12min).

- **Example 2:** Introduction to forthcoming `flowr` `R` package for network processing and traffic assignment using a recent CPCS assignment in the Gulf-Cooperation Council (GCC) region (which has a strong `fastverse` backend) (12min).