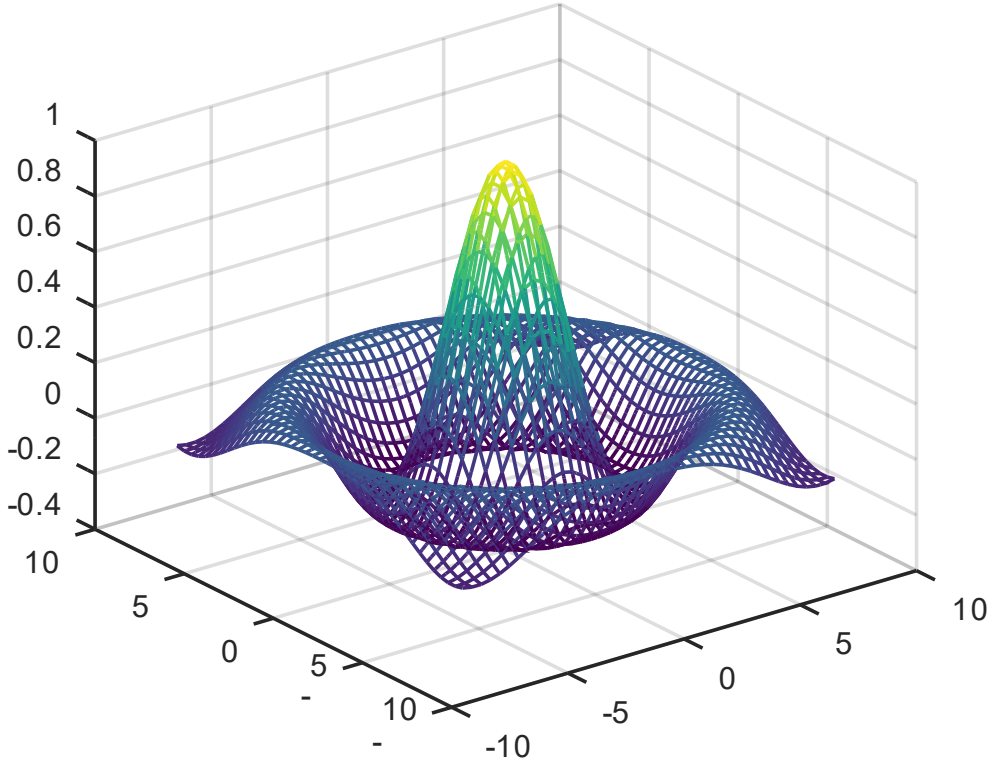
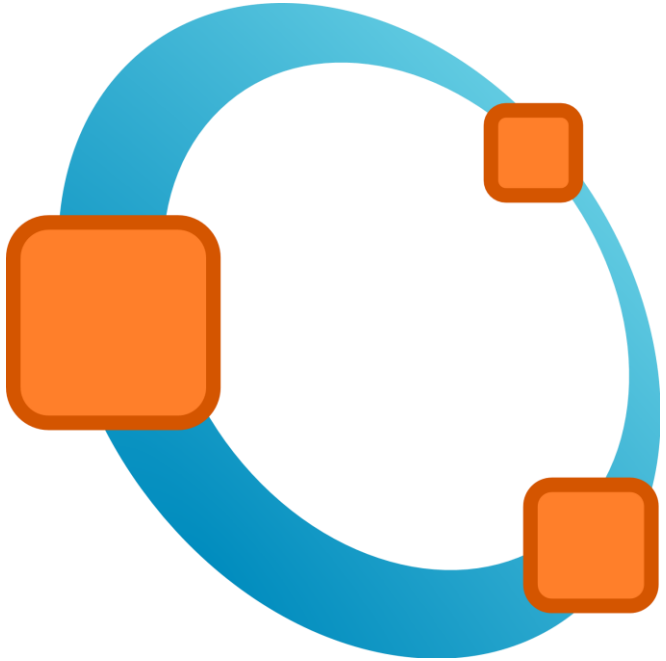
GNU Octave in 2018: Project Status and Future Challenges

12 March 2018





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Origins and Some History

1988: First Discussions

1992: Software Development Begins

1993: First Public Release

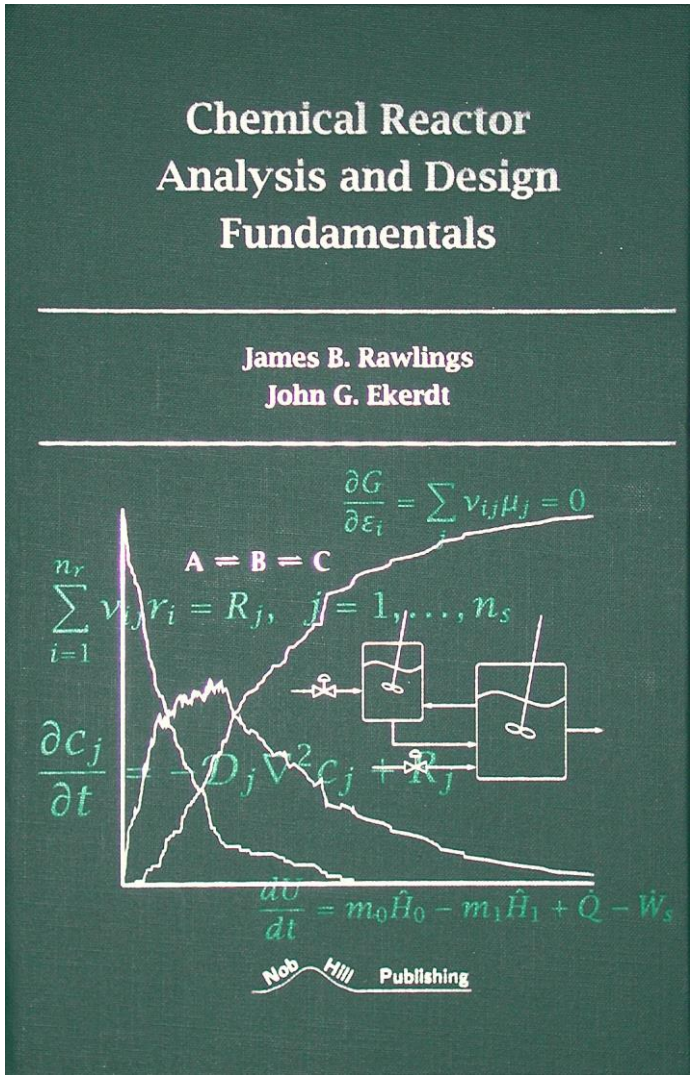
1994: Version 1.0

…

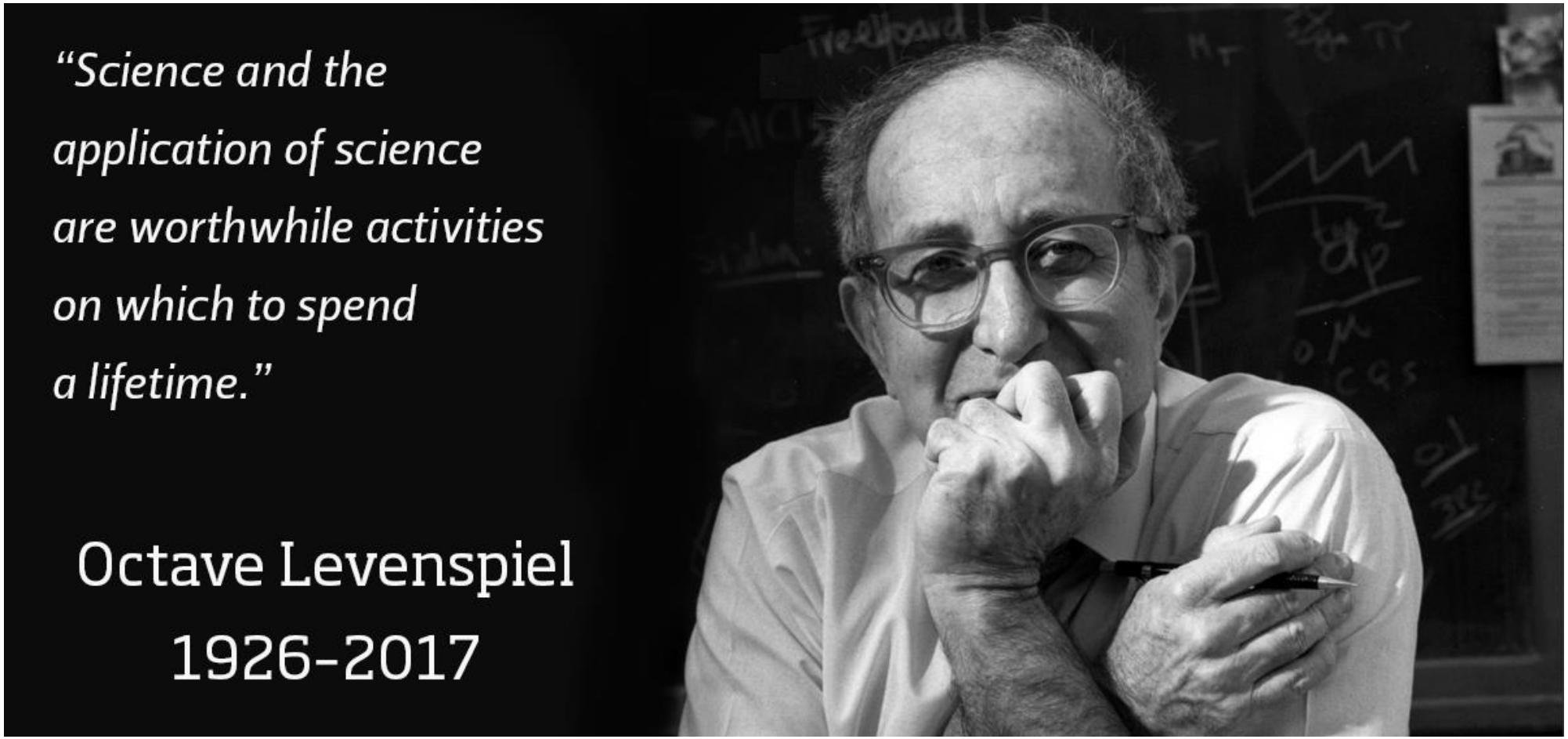
2002: Book (Finally!) Published

…

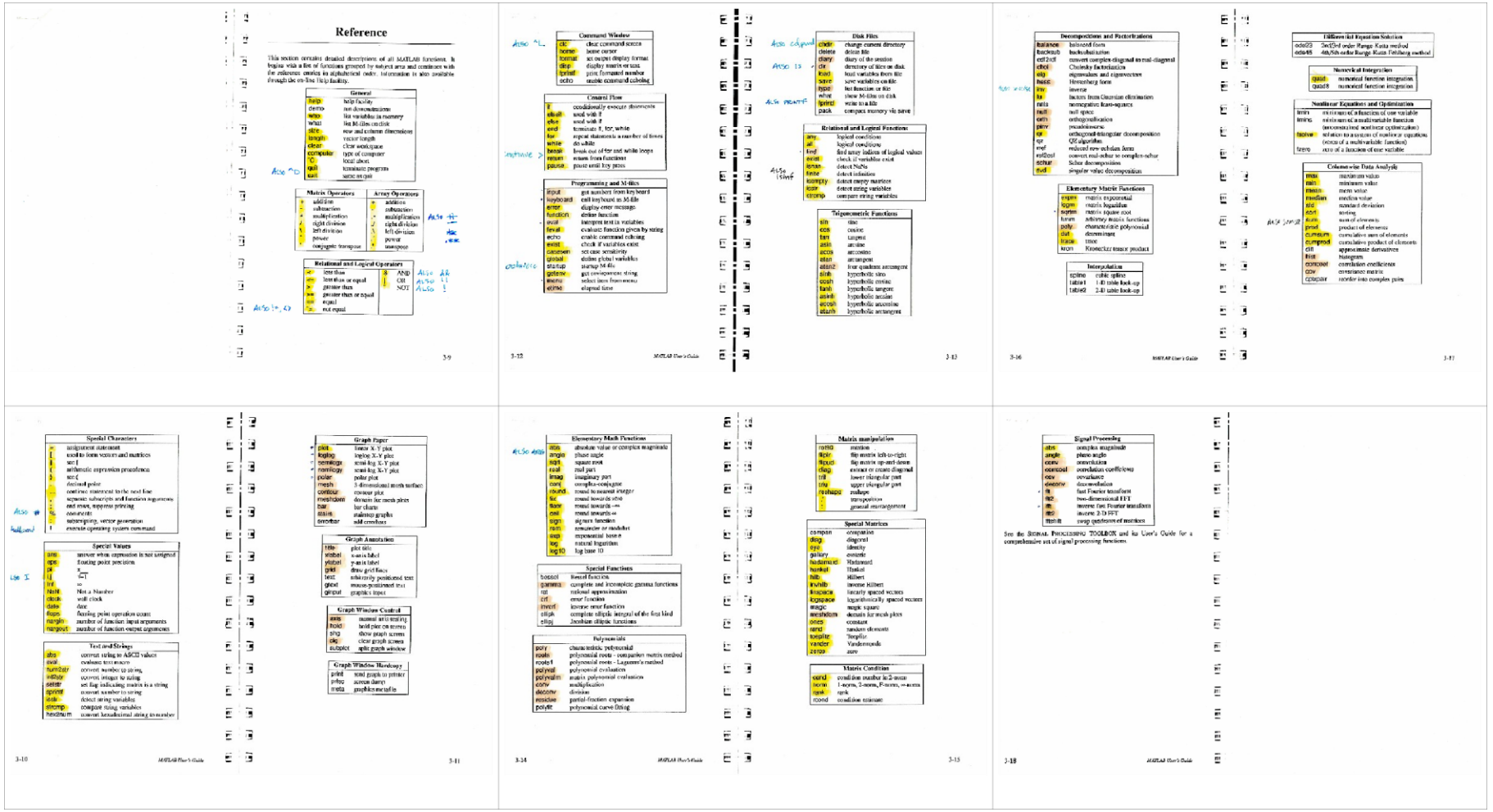
2017: Still going strong; jwe joins ESI



What's in a Name?



Project Scope in 1992



Project Scope Today

MANY more functions

More (and more complicated) language features

Early Goals

Interactive language

High quality numerical tools

Free software distribution

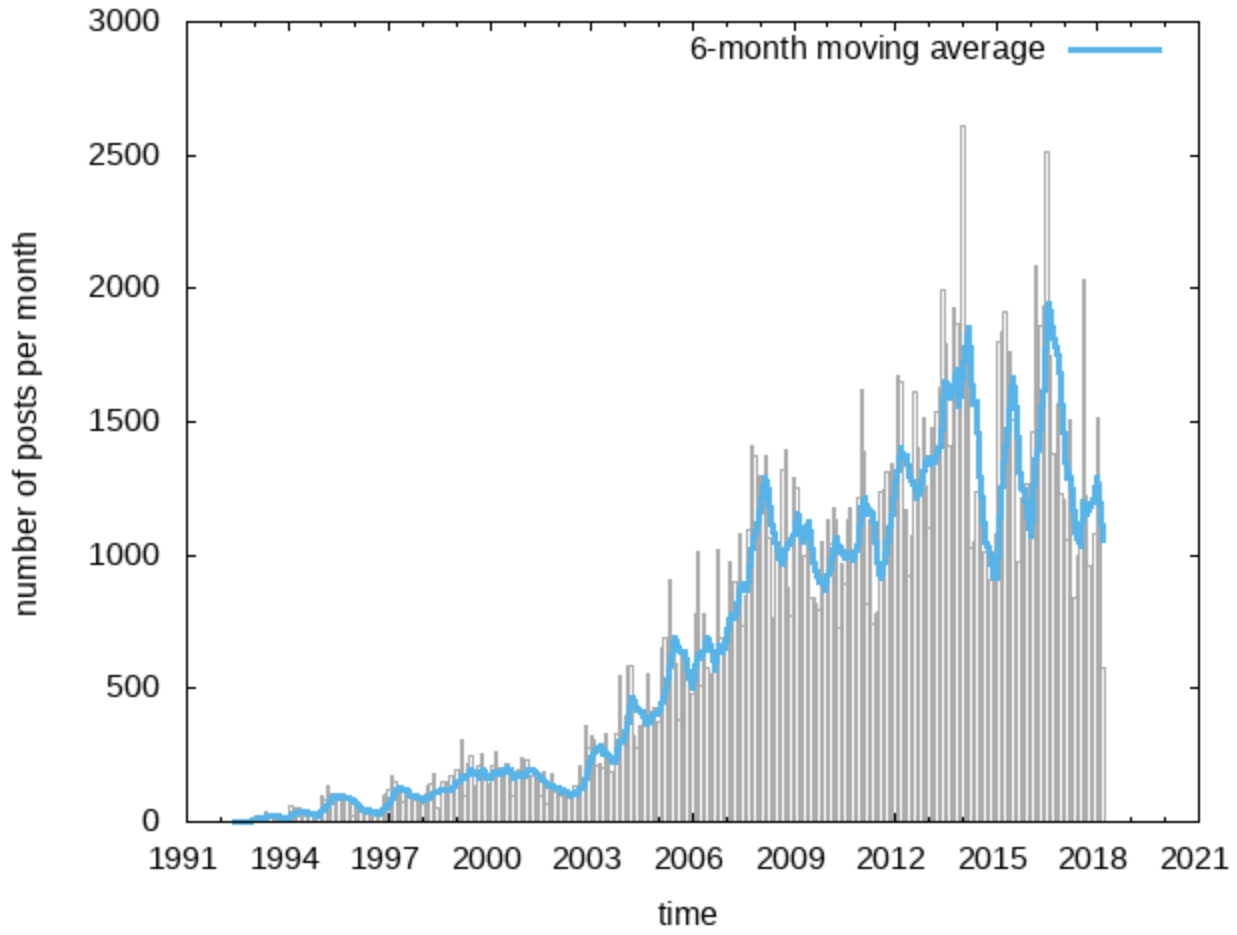
Current Goals Include

Matlab compatibility: Octave users have come to expect a high degree of compatibility

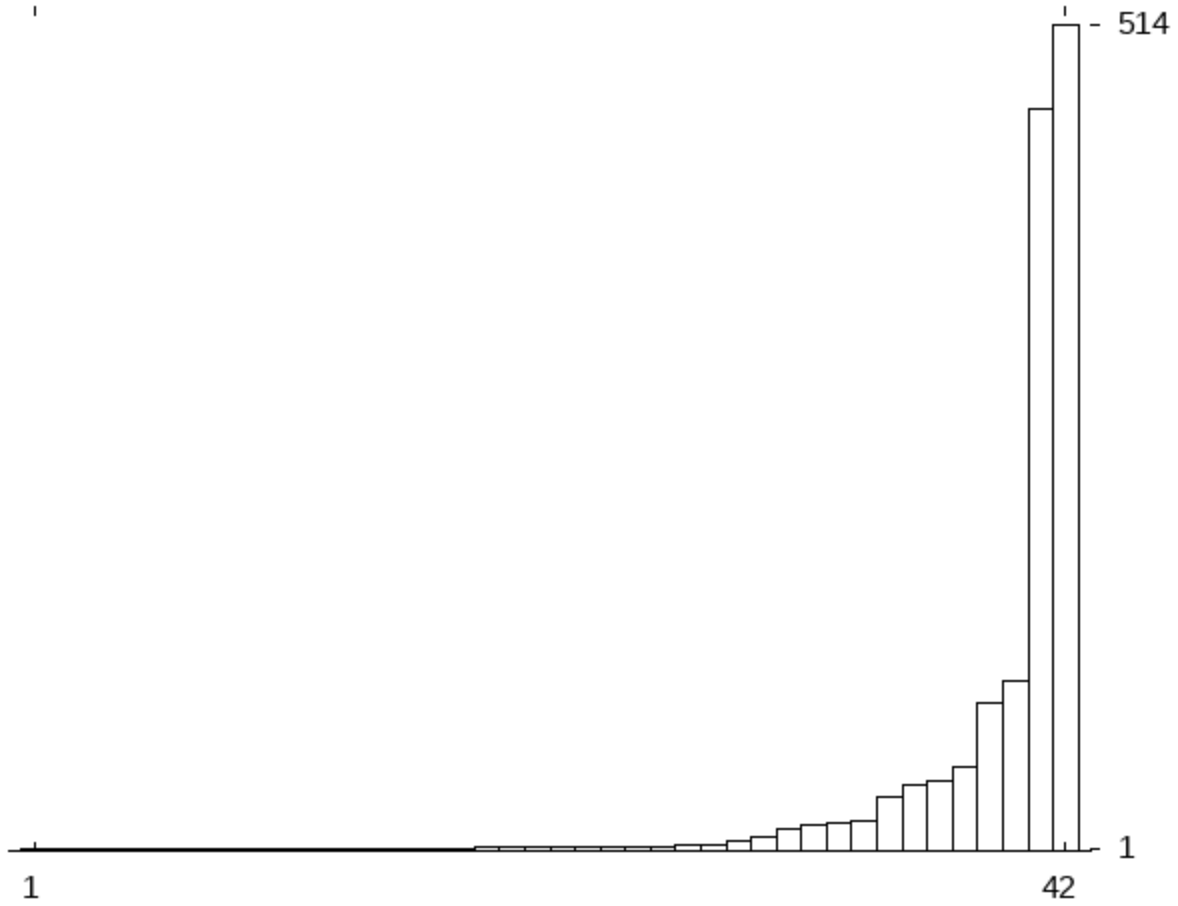
Improving ease of use and installation

Ensuring the community of Octave contributors and users remains active and healthy.

Project Activity – Mailing Lists



Developer Activity



Innovation vs. Compatibility

- C-style I/O – fopen, printf, etc.
- Variable argument lists – f(…) vs f(varargin)
- Struct
- Short-circuit && and || operators
- Multiple functions in a single file vs:

  subfunctions, nested functions, and now local functions
- Assignments are expressions: a = b = c *or* if (status = fcn (…))
- Indexing: A(I,j)(k,l) *or* [1,2;3,4](:,1)

Specific Development Areas for the Near Future

Improvements in usability and reliability of the GUI interface

- Code editor
- Debugger
- Variable editor (spreadsheet-style interface to data)

Improvements to language features and compatibility

- classdef – partially implemented
- packages (+DIR namespaces) – partially implemented
- large data files using current HDF5-based Matlab .MAT file format

  …
- JIT Compiler – longer term

Toolboxes

Improve compatibility and coverage of widely used Octave packages

- Signal processing
- Image processing
- Statistics
- Numerical optimization
- Control systems design
- Communications