The SENPACK Manual

by

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A Library of Numeric
Functions for Senac

Acknowledgements

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Senpack includes a version of the numerical subroutine library Numerical Recipes which I translated into Lisp and then interfaced with Senac. This translation was performed by agreement with the permission of Numerical Recipes Authors, whose agreement is gratefully acknowledged.

Optimization functions include large sparse linear programming, integer programming, simulated annealing, assignment problem and global optimization for functions of a real variable.

The most recent addition is an extension to the facilities in Chapter 18 for solving partial differential equations using the finite element method. These include boundary value problem, eigen value problems and initial boundary value problems in one and two space dimensions. There are four different types of mesh generation: manual entry, grid entry for structured meshes, automatic triangulation and automatic quadrilateral mesh decomposition. Output plotting requires the Sengraph module.

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‘‘Lisp also has a reputation for being slow at numeric computations. However, applications such as symbolic algebra, computer graphics, and vision have caused Lisp implementors to pay special attention to making Lisp as efficient at C or Fortran at numerically intensive applications. Lisp’s ability to easily manipulate functions and compose new programs makes it exceptionally good at building libraries of complex numerical algorithms."
in "Common Lisp" by Wade L. Hennessey

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