A GENERAL FORM OF LINEAR PROGRAMMING

\[ \text{Maximize } z = \sum_{j=1}^{n} c_j x_j \]

Subject to \[ y_i = \sum_{j=1}^{n} a_{ij} x_j \quad (i = 1, 2, \ldots, m) \]

\[ l_j \leq x_j \leq u_j \quad \text{for } j = 1, \ldots, n; \]

\[ b_i^l \leq y_i \leq b_i^u \quad \text{for } i = 1, \ldots, m \]

Very large problems (e.g., 1,000,000 rows by 10,000,000 columns) can be solved if the matrix \( \{a_{ij}\} \) is sparse. But not all problems are sparse. \texttt{retroLP} solves dense problems quickly. The graph shows running time of a standard implementation versus \texttt{retroLP} as a function of problem density. \texttt{retroLP} can also be easily modified to run on a cluster of workstations.

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see \texttt{http://cis.poly.edu/rvslyke/} for more details.
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