

Section 5.10. Incomplete Factorizations

Note. In this brief (three paragraph) section, Gentle discusses approximating factorizations with “incomplete factorizations.” As an example, we might approximate an LU factorization of A as $A \approx \tilde{L}\tilde{U}$ where we take $\tilde{\ell}_{ij} = \tilde{u}_{ij} = 0$ if $a_{ij} = 0$ (here, A is a “sparse matrix”; that is, one with many 0 entries). Since there is no discussion of matrix metrics in this setting, there is no way to address the accuracy of the approximations.

Note. Gentle gives a modification of Gaussian elimination for use in approximations in equation (5.44), but notice that there are typographical errors in this, as revealed in the website for the textbook [Errata and Clarifications](#) (accessed 4/25/2020).

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