

The theme of the second project is up for choice. Each pair of students must choose a different pair of papers, from one of the following topics listed below.

Comparing Two Rootfinders

- Dario Andrea Bini and Giuseppe Fiorentino: **Design, analysis, and implementation of a multi-precision polynomial rootfinder.** *Numerical Algorithms* 23:127-173, 2000.
- Steven Fortune: **An Iterated Eigenvalue Algorithm for Approximating Roots of Univariate Polynomials.** *J. Symbolic Computation* 33:627-646, 2002.

Application of Cayley-Bacharach

- Xue-Zhang Liang, Chun-Mei Lu, and Ren-Zhong Feng: **Properly posed sets of nodes for multivariate Lagrange interpolation in C^s .** *SIAM J. Numer. Anal.* 39(2):587-595, 2001.
- Xue-Zhang Liang, Li-Hong Cui, and Jie-Lin Zhang: **The application of Cayley-Bacharach theorem to bivariate Lagrange interpolation.** *Journal of Computational and Applied Mathematics* 163(1): 177-187, 2004.

Efficiency and Accuracy of a Multivariate Horner Scheme

- Martine Ceberio and Vladik Kreinovich: **Greedy Algorithms for Optimizing Multivariate Horner Schemes.** *ACM SIGSAM Bulletin* 38(1):8-15, 2004.
- J.M Peña and T. Sauer: **On the Multivariate Horner Scheme II: Running Error Analysis.** *Computing* 65:313-322, 2000.

The deadline is Monday 1 November 2004 at 1PM

Every pair must hand in a technical report of at least five and not more than ten pages long. There are three items the report must contain.

In this report you must define the problem and describe in your own words the results of the two papers. When copying from the papers – e.g., the statement of a theorem – you must explicitly cite the paper.

Secondly, the report should describe a computational experiment illustrating the most important aspects discussed in the paper. An appendix to the report can be the output of a Maple worksheet, or the listing of a program on some examples.

The third and last element of the report is the conclusion. This should read like an executive summary. It should be brief, but completely self-contained. Summarize in one or two paragraphs what is most important about your project.

Feel free to come to my office for help.