**CSCI3656: Numerical Computation**
**BONUS Homework: Due by the end of semester**

Turn in your own writeup by the end of the semester.

Use your favorite graphics or presentation software (Google Slides is free) to create a nice-looking decision tree, similar to the one I made on the whiteboard during Lecture 8.1, where I summarize the methods for solving linear systems.

Add commentary from your own experience with the linear systems homeworks. For example, you might say that the Jacobi method doesn't always converge. And you might review from lecture (or look up in the textbook) the conditions for Jacobi to converge.

Bonus points for the BONUS homework:

- 5 points for adding the QR factorization to the decision tree

- 5 points for adding the SVD to the decision tree

- 10 points each for adding methods that we didn't talk about in class (conjugate gradient (CG), GMRES, sparse Cholesky, . . . ). Take a look at the methods available in Matlab or `scipy.linalg` for inspiration.

- 25 points for adding an appropriate branch(es) on preconditioning. (See, for example, Section 6.6.5 of Demmel's *Applied Numerical Linear Algebra*.)