Report: Jacobi Algorithm

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The Jacobi algorithm is an iterative method to find the eigenvalues of a matrix. It works by selecting the largest absolute off-diagonal value, creating a Givens rotation matrix, and applying it to the matrix. This causes the zeroing of this off-diagonal value, and when repeated several times, the resulting matrix will be a diagonal matrix of only the eigenvalues.

The Jacobi method has a few caveats however. First, while zeroing an off-diagonal value, other values in the matrix may change, including those the algorithm has already zeroed. In a sense, this is negative progress, but eventually, all the off-diagonals will converge towards zero.

Second, the value that you choose to zero should be the largest off-diagonal value. Failure to do so results in a significantly slower convergence. The most efficient off-diagonals are the largest because they have the greatest effect on the diagonal property of the matrix.