

| Algorithm                     | Description   | Complexity          | Accuracy |
|-------------------------------|---|---------------------|----------|
| Full Eigen Decomposition      | Computes all eigenpairs of $A^T A$ , $AA^T$         | $\mathcal{O}(n^3)$  | Exact    |
| Jacobi Eigenvalue Method      | Iteratively zeroes off-diagonal elements            | $\mathcal{O}(n^3)$  | High     |
| <b>Power Iteration (Used)</b> | Iteratively extracts top eigenvectors via deflation | $\mathcal{O}(kn^2)$ | Approx   |

Table 1: Comparison of SVD computation methods.