Module/framework/package	**Name and brief description of algorithm**	**An example of a situation where using the provided GLM implementation provides superior performance compared to that of base R or its equivalent in Python (identify the equivalent in Python)**
Base R	The IWLS with Fisher Scoring method changes the problem into a series of weighted least squares calculations. The algorithm performs weight calculations from present estimate values before minimizing weighted residual sum of squares to update parameters. Implemented in glm.fit function.	Base R achieves exceptional statistical precision when performing standard statistical analysis that depends on inference and diagnostic methods. The statistical interpretation requirements for research publications and reports are better met by Base R than Python equivalents because it provides superior tools for residual analysis and influence measures and goodness-of-fit statistics.
Big Data version of R	The biglm package enables the calculation of sufficient statistics through incremental processing. The ff package maintains data structures on disk storage and snow/Rmpi allows cluster processing. These tools enable GLM to process data that exceeds memory capacity.	HPC packages surpass base R for statistical modeling of large datasets exceeding RAM capacity by processing the data through chunks. Biglm+ff enables statistical modeling for 50GB datasets on 16GB machines when standard R or Python pandas would be unable to process such data.
Dask ML	The system uses ADMM algorithm to break down optimization tasks across distributed data segments. The system offers distributed versions of Proximal Gradient Method and L-BFGS which work effectively with out-of-core processing requirements.	Dask ML delivers superior performance than scikit-learn for processing data between RAM capacity and full cluster requirements (10-100GB) through its shared API. The analysis of customer analytics by data scientists in medium-sized companies achieves out-of-core performance without

		requiring framework learning or cluster deployment.
Spark R	The Distributed Fisher Scoring via L-BFGS system executes the IWLS algorithm across distributed Spark RDDs. The system employs L-BFGS to generate efficient second-order information distribution across cluster nodes.	When working with enterprise-scale analytics on terabyte datasets distributed across multiple computing clusters SparkR delivers superior performance than parallel R implementations by a significant margin. The analysis of call detail records by telecommunications companies and the processing of billions of transactions by retailers achieve distributed data processing through R's modeling syntax.
Spark optimization	The system provides three distributed optimization options including Full Gradient Descent for precise solutions alongside SGD with miniBatchFraction parameter for performance adjustment and L-BFGS for accelerated convergence. The system operates on distributed datasets through its implementation of these features.	Spark MLlib achieves superior performance in optimizing web-scale machine learning operations of clickstream data analysis and advertising analytics where billions of records exist over R and scikit-learn implementations. The platform shows superior performance for business-ready machine learning pipelines because it unites distributed processing functionalities with optimized convergence algorithms.
Scikit-Learn	Users can choose from various solvers through Multi-solver Optimization Toolkit which include basic 'lbfgs' and specialized 'liblinear' for L1 regularization and 'newton-cg/cholesky' for exact solutions and 'sag/saga' for large datasets with averaging.	The SAGA solver shows excellence when working with extensive sparse datasets which need advanced regularization methods. SAGA provides superior performance when classifying texts or analyzing genomic data through millions of sparse features because it achieves quick convergence while being memory-efficient. The workflow

		efficiency of Scikit-learn improves due to its integrated capabilities with preprocessing and cross-validation.