

March 25, 2019

- **Observations:** This paper proposes the framework "*Sparrow*" for the Large-scale data analytics for shifting the shorter tasks duration providing the large degree of parallelism to reduce the latency overhead. Sparrow follows the random sample approach for providing the optimal performance and provides high-throughput without compromising the placement quality of the tasks. Sparrow considers several tasks and follows two strategies: Per-task sampling samples two workers and tasks are allocated to them on the basis of shortest pending queue. The main theme of the paper is *batch sampling with late binding*. For executing the two-level jobs it provides the execution constraints in which the probing is used for the workers which full fills the constraints and for better decision making these constraints are to be share with other tasks and thus provides high fault tolerability.
- **Conclusions:** Sparrow provides the decentralized-scheduling approach which is comparable to the ideal scheduling and provide the performance 0.8X to the ideal one. It uses the idea late binding with batch sampling to achieve the optimal performance. It is able to achieve high scalability and lower latency by handling both dynamic and static jobs, also it can handle several other types of jobs like batch, MPI, micro services and streaming jobs.
- **Limitations:** Heavy-loaded clusters may get face difficulties due to the dead-line blocking. Gang-scheduling is not supported and hence multi threading is not supported. It only supports job-level policies and query-level policies are not supported. Fault-tolerability is not supported. Overhead may be increased due to the Long-running executing algorithm as it need to be run on each machine. As the evaluation results are obtained on the synthetic-benchmark, actual results may be different for the real-time environment.
- **Future work:** Future work can be extended to provide the fault-tolerability for the scheduling tasks. In present work results and observations are obtained only on the synthetic data produced by authors and hence evaluations can be done on real-time benchmarks for obtaining real-time results.