1. Name(s) of the author(s): **Brad Glasbergen, Kyle Langendoen, Michael Abebe, Khuzaima Daudjee**
2. Title of article: **ChronoCache: Predictive and Adaptive Mid-Tier Query Result Caching**
3. Title of journal, volume number, date, month and page numbers: **SIGMOD '20: Proceedings of the 2020 ACM SIGMOD International Conference on Management of Data, June 2020, Pages 2391–2406**
4. Statement of the problem or issue discussed: **Data-driven applications are becoming increasingly popular in a variety of domains, and databases are the primary means of storing and querying their data. Access latency affects the performance of data-driven, web-scale client applications. To address this concern, businesses strive to cache data on edge nodes closer to users, avoiding costly round-trips to remote data centers. These geo-distributed approaches, however, are limited to caching static data.**
5. The author’s purpose, approach or method: **They present ChronoCache, a mid-tier caching system that uses geo-distributed edge nodes to cache database query results closer to users. ChronoCache was implemented as a middleware caching layer between application clients and the remote database. Clients send queries to ChronoCache, which then interacts with the cache and remote database on their behalf in order to return a result set. They demonstrated techniques for dynamically (1) discovering query patterns in database application workloads, (2) exploiting query patterns by combining query requests, and (3) predictively executing these combined queries and caching their result sets ahead of time using ChronoCache. Such client application query requests are then fulfilled from nearby edge nodes rather than through costly trips to a remote datacenter.**
6. Primary (evaluation) result: **They tested ChronoCache as a geo-distributed edge cache for dynamic data by deploying the benchmark machine, ChronoCache, and Memcached on AWS in the US-East region, and the database machine in the US-West region. As a result, the average round-trip time between the client and database is 70 milliseconds. Over a 5-minute interval, they measured query response times for each system on the AuctionMark workload. They discovered that ChronoCache has a cache hit ratio of 45 percent, ScalpelCC and Scalpel-E have a cache hit ratio of 10 percent, and Apollo and LRU have a cache hit ratio of less than 2%.**