The PaLM Algorithm

Lets generalize it - an algorithm flow

- Profile variables - its access pattern and locality type
- Cluster variables to temporal locality / spatial locality
- Choose a memory architecture template
- Select the specifications of each memory modules (cache size, line size etc.)
- Map variables to different modules exclusively

The PaLM Algorithm

Profile the temporal locality

- How to describe the temporal locality of an variable?
- One variable may have multiple values and get accesses multiple times within its lifecycle.
- For a single variable X, how many accesses on each of its values, in average

  Avg_accesses_per_value(X) = #_of_accesses(X) / #_of_value_accessed(X)

- For a single variable X (or one of its value), the average distance between two consecutive access.

  Avg_reuse_dist(X) = SUM(reuse_dist(X)) / #_of_reuses(X)