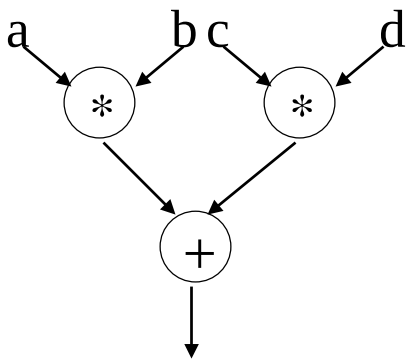
Example

- Compute the following results
  - x= a*b + c*d;



Lecture 11

Limitations of the Flynn taxonomy, data-flow and DSM.

Questions

- How can general purpose hardware can be designed to run dataflow programs?
- How will the program and data be represented and stored?
- How does this model fit into the Flynn taxonomy. Is it MIMD?

Dataflow

- Control execution of operations using data availability.
- No concept of memory addresses or storage.
- Theoretically this gives immediate access to the ultimate level of parallelism achievable for any set of operations on a data set.

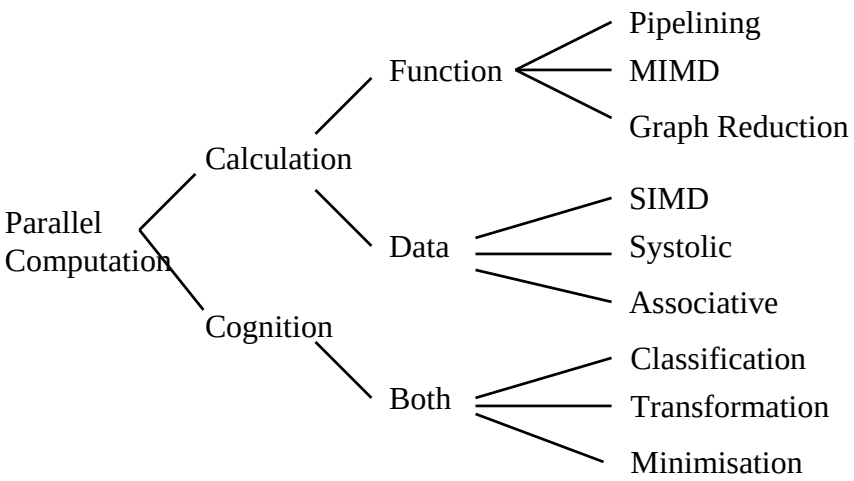
Other taxonomies

- Other methods for classifying parallel computers have been suggested.
  - Fountain, T.J. (1994) "Parallel Computing, Principles and Practice", Cambridge Uni Press.
  - Krishnamurthy, E.V. (1989), "Parallel Processing", Addison Wesley.

Limitations of Flynn

- Most parallel machines are SIMD or MIMD.
- The great majority of general purpose parallel computers are MIMD.
- This presents a problem, as the Flynn taxonomy does not adequately distinguish between them.

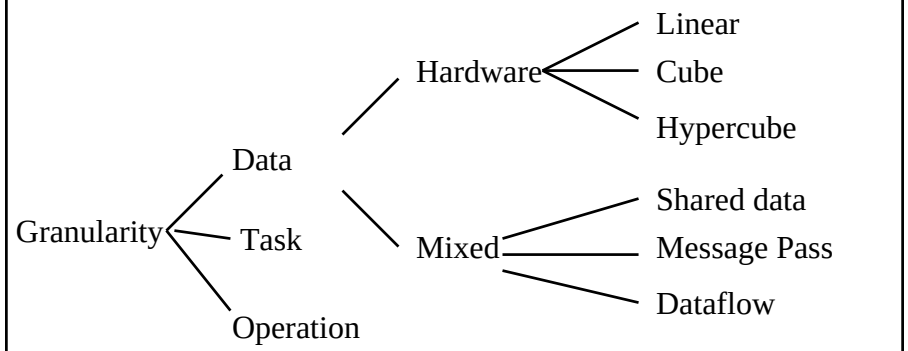
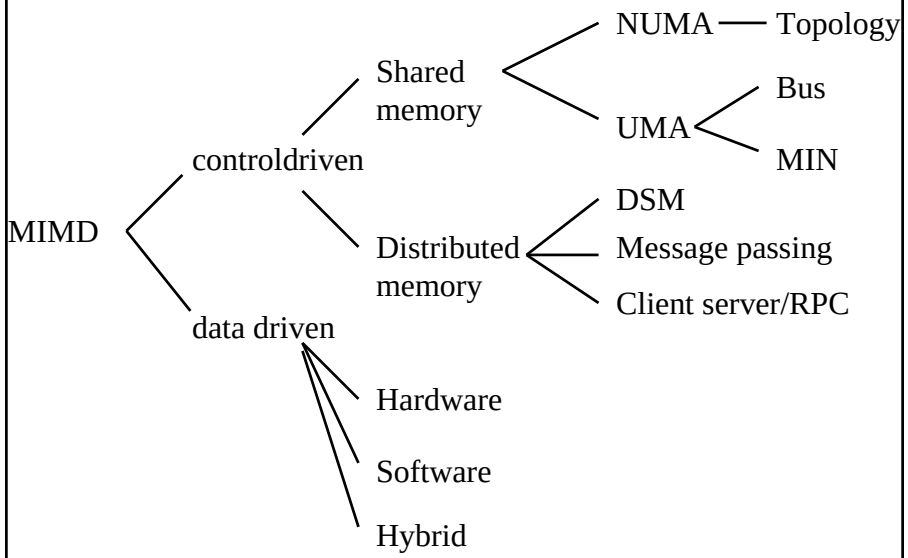
Fountain Taxonomy



Consider

- How do we distinguish between the MIMD shared, distributed , and distributed shared memory (DSM) architectures?
- How do we distinguish between the control flow and data flow programming paradigms?

Krishnamurthy Taxonomy



Pears Taxonomy