Cloud Computing – Dr abrishami - Project 2 – WorkflowSim

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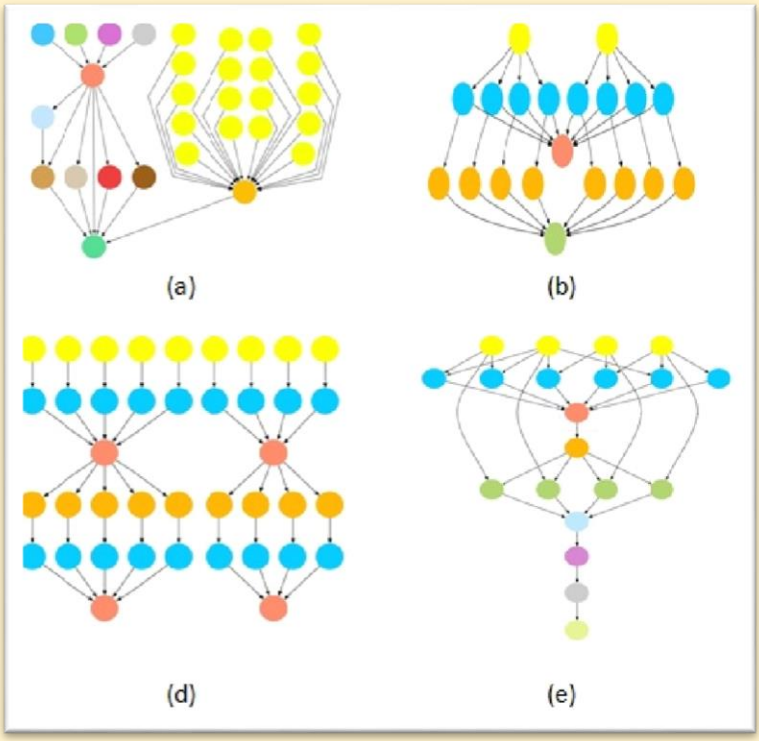
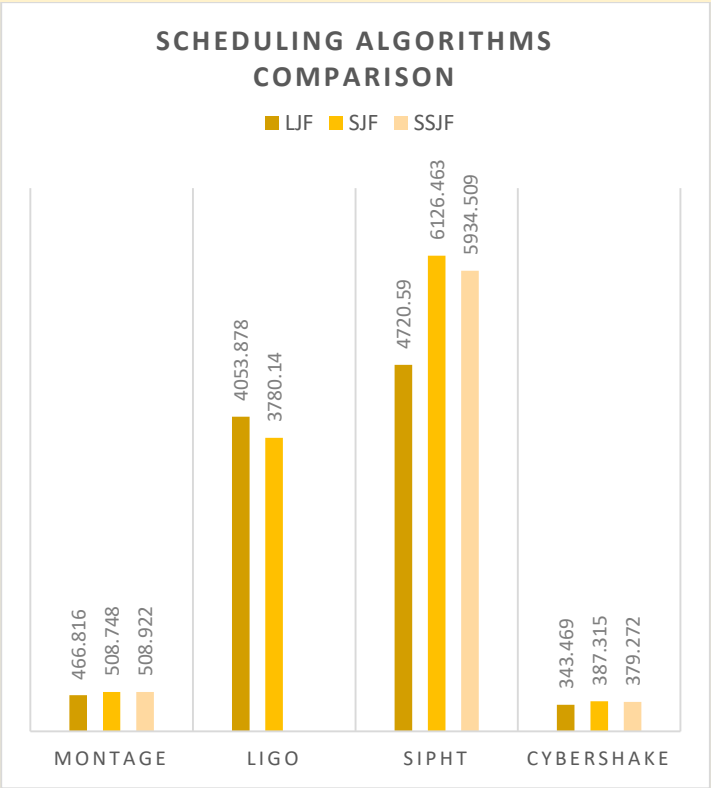
At first, let's have look on the schema of our 4 workflows:



{a=sipht, b=cybershake, d=ligo, e=montage}

I simulated those 4 workflows on 4 virtual machine types with speed of 500,1000,1500,2000 mips.

Following chart is the result of my simulation:



As its visible on the chart, LIGO workflow doesn't have any SSTF result. LIGO does not have a critical path. The workflow of the LIGO project is highly complex and involves many different teams and processes. Each team works independently and has its own timeline and goals. There is no single critical path that all teams must follow. So, SSTF scheduling algorithm is not suitable for LIGO workflow. SSTF scheduling algorithm is designed to optimize disk access time by minimizing the seek time of the disk head. LIGO workflow involves complex calculations and data processing which cannot be optimized using SSTF scheduling algorithm.

There is no exactly better algorithm for scheduling for all workflows. In each workflow based on its structure, there is one suitable algorithm which might be the worst one in other workflows. For example, LJF is the best algorithm for SIPHT but on LIGO, it's worse than SJF. The structure and complexity of SIPHT and LIGO is the reason of their higher result.