

# Models

## Multiple types of model

- Prescriptive (how to build machines)
- Descriptive (how to design algorithms/Software)  
how does the user “think parallel”

We will focus on descriptive models.

# Models

In descriptive model key goal is to preserve “order” among algorithms, exact costs is not so important.

- The purpose is to give guidance to the programmer not cycle accurate times.
- Order of magnitude accurate predictions might be sufficient

# Models

Probably need multiple levels of models with mappings between them:

- Preserve Costs
- Preserve Correctness
- Lower models could be prescriptive models

Don't take models too seriously:

- Good algorithms should be robust across reasonable models

# Models

## Energy :

- need to focus on data movement.
- Perhaps can piggyback on locality-aware models

## Resilience : two ways to deal with it

- Support reliable abstract model on unreliable substrate (e.g. map-reduce). Put it into the mapping between models.
- Expose unreliability to the user...not clear how to do this.

Modeling failures is itself useful