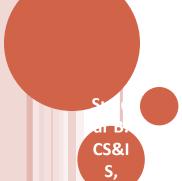
## CS F364 Design & Analysis of Algorithms



**Graph Problems:** 

Converting DFAs to REs



## CONVERSION OF A DETERMINISTIC FINITE AUTOMATON TO THE CORRESPONDING REGULAR EXPRESSION

- A DFA is a labeled graph: (labels are strings)
  - Compute path labels by accumulating regular expressions instead of weights:
    - Labels (i.e. strings) on transitions (i.e. edges) are concatenated along a path
    - Multiple paths are merged by a union (of regular expressions)
    - Cycles are Kleene Closures (of the regular expression over the path constituting the cycle).
  - Compute paths from the start state to all the final states.
- Exercise: Formulate the recurrence and write the DP algorithm.