CS-184: Computer Graphics

Lecture #07: BSP Trees

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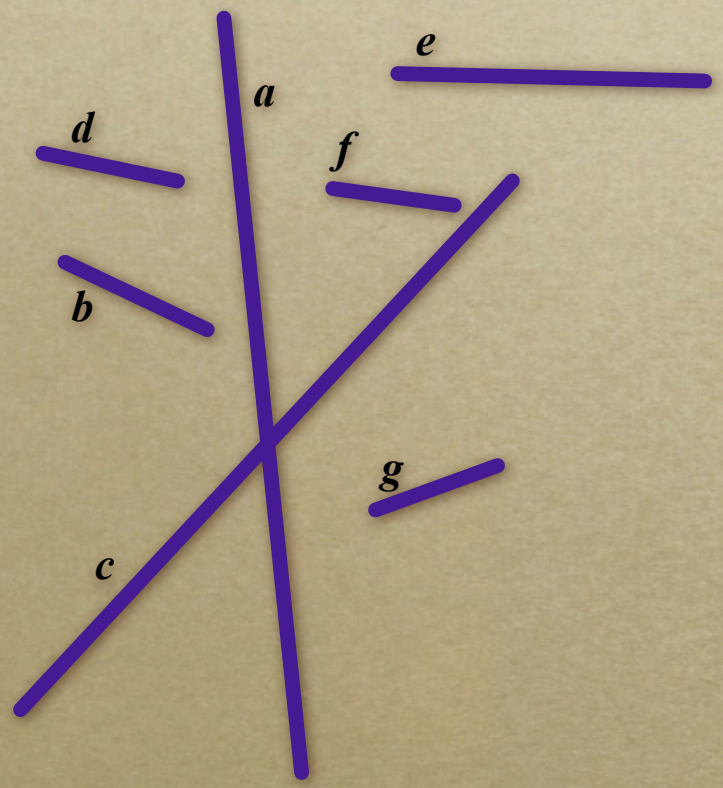
BSP-Trees

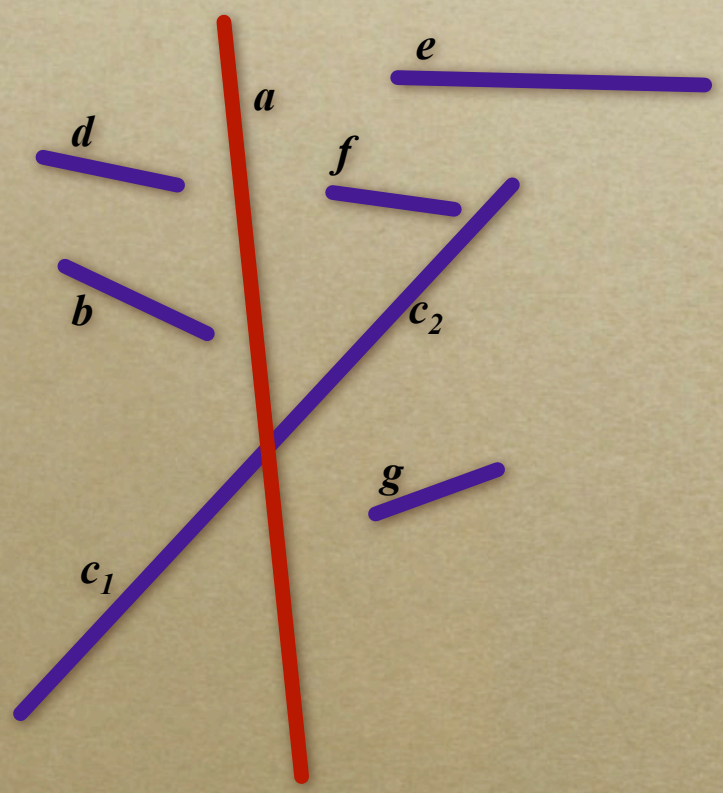
- Binary Space Partition Trees
  - Split space along planes
  - Allows fast queries of some spatial relations
- Simple construction algorithm
  - Select a plane as sub-tree root
  - Everything on one side to one child
  - Everything on the other side to other child
  - Use random polygon for splitting plane

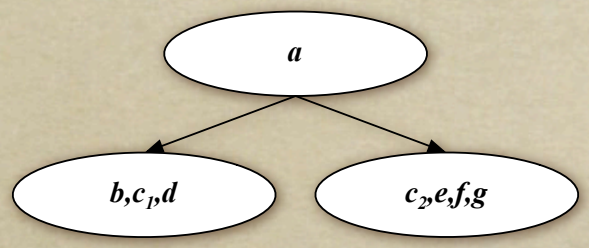
BSP-Trees



a,b,c,d,e,f,g

BSP-Trees





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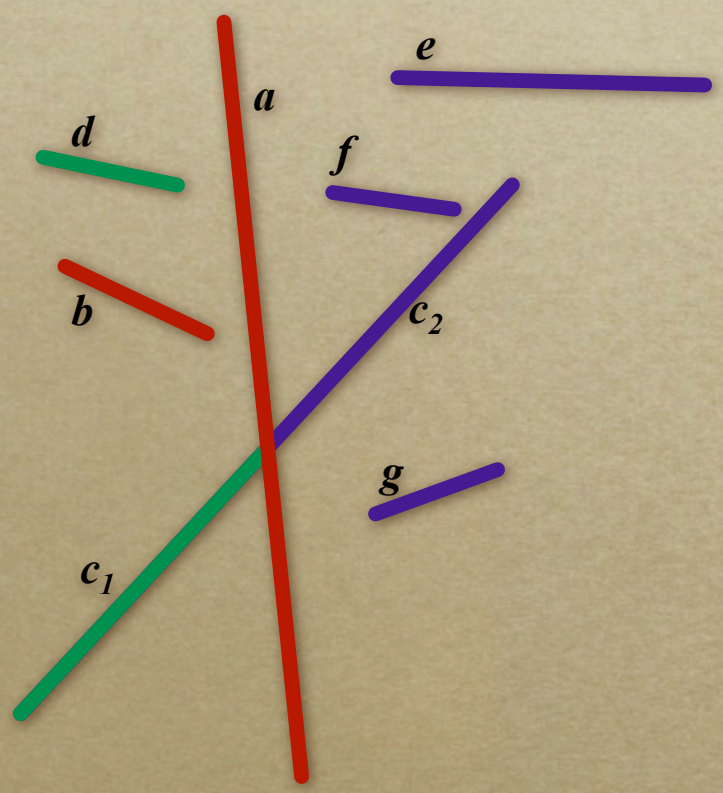

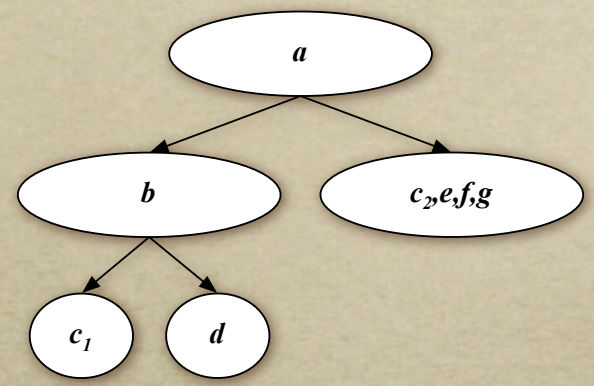

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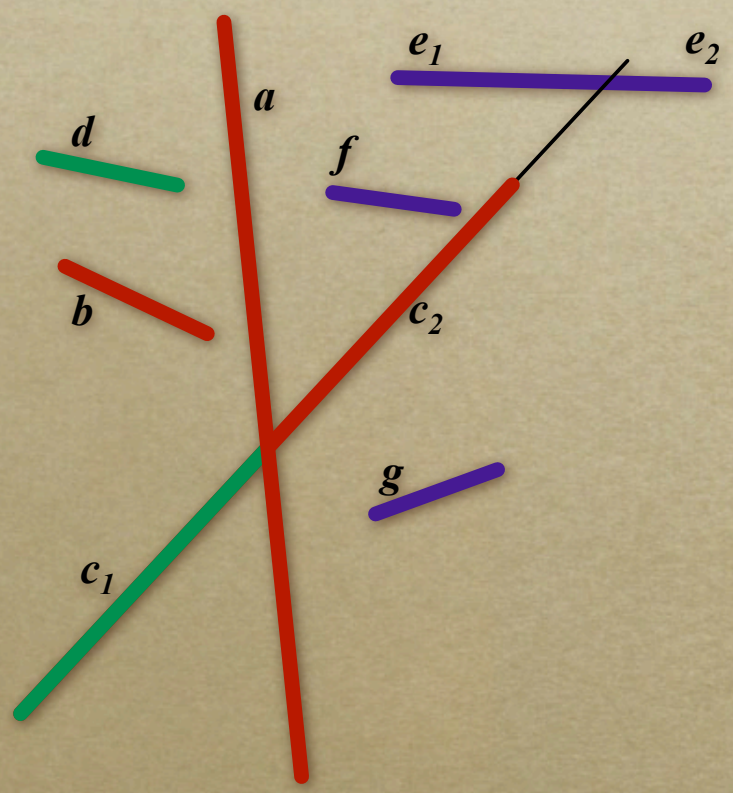

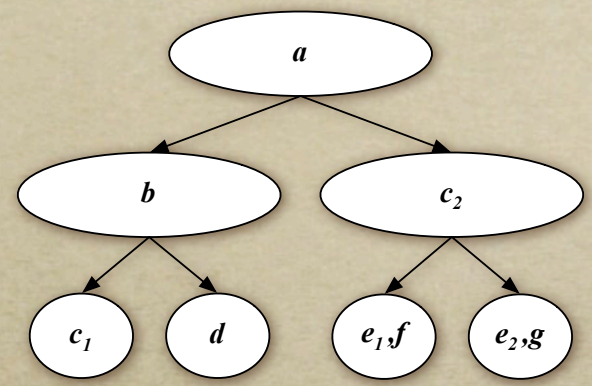

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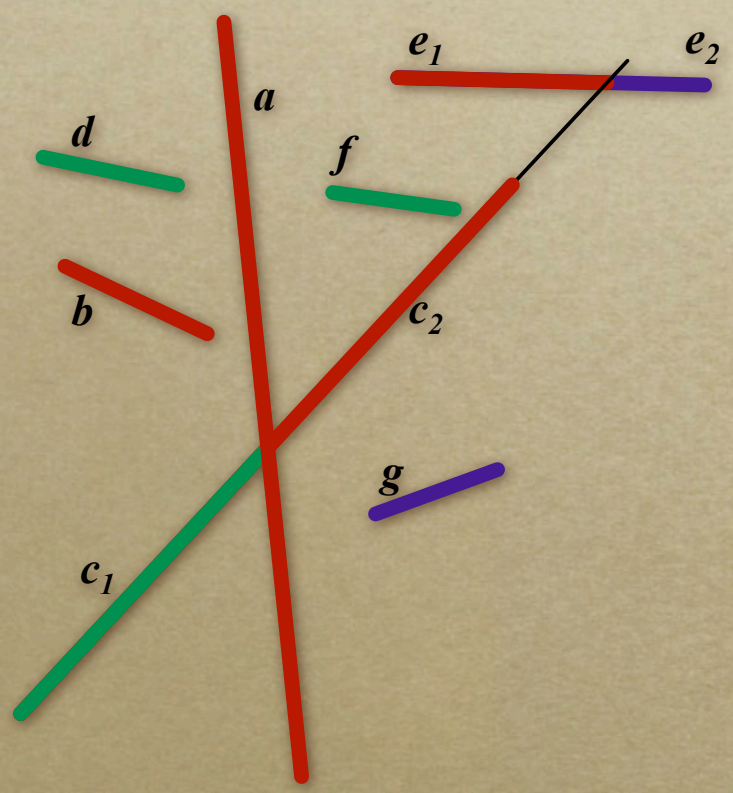

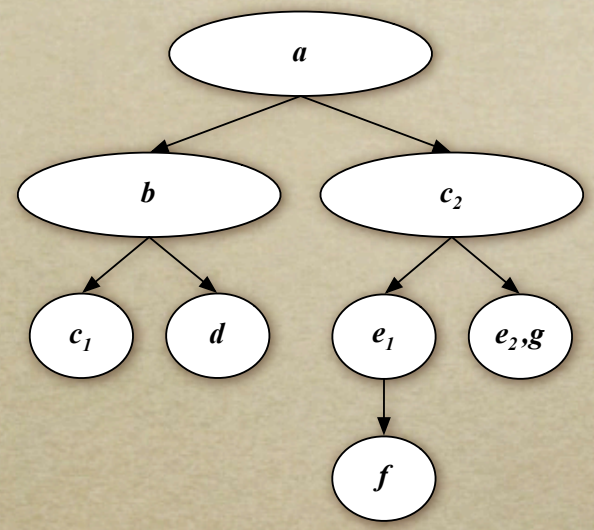

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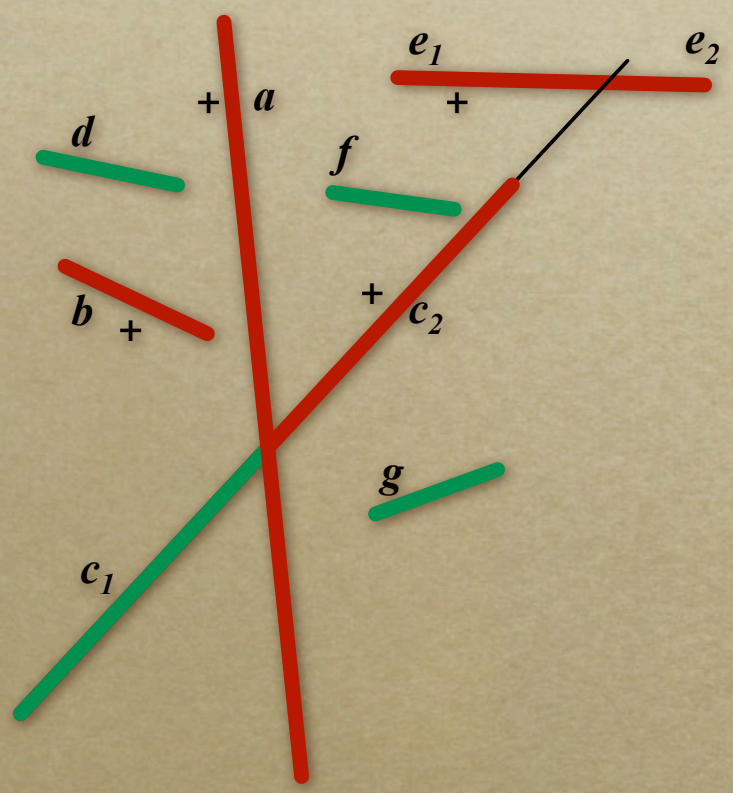
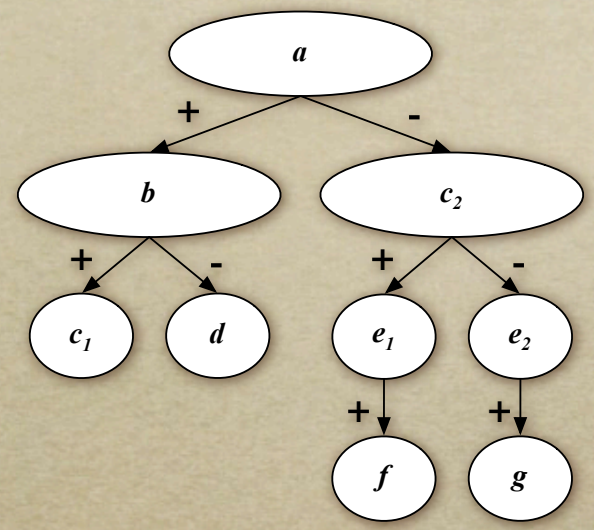
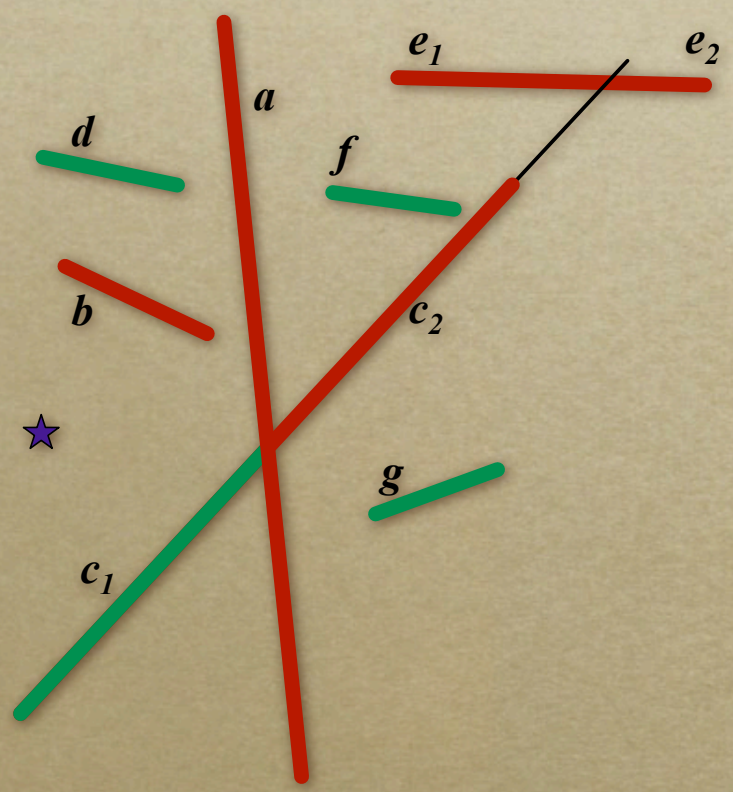


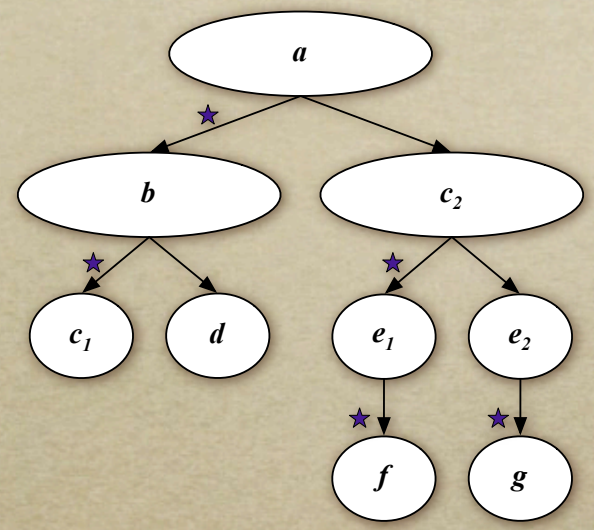


BSP-Trees

- Visibility Traversal
  - Variation of in-order-traversal
    - Child one
    - Sub-tree root
    - Child two
  - Select "child one" based on location of viewpoint
    - Child one on same side of sub-tree root as viewpoint

BSP-Trees





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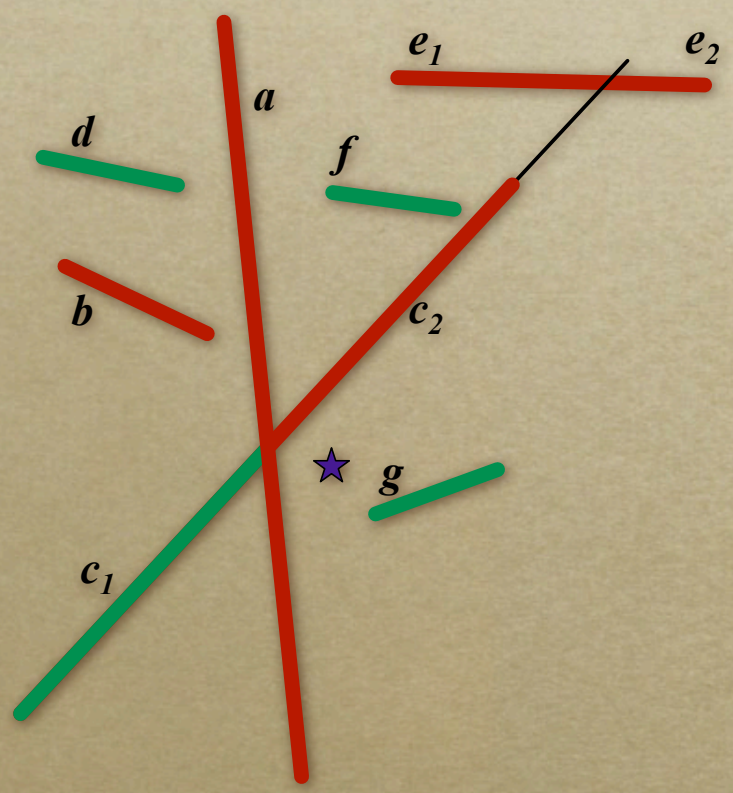
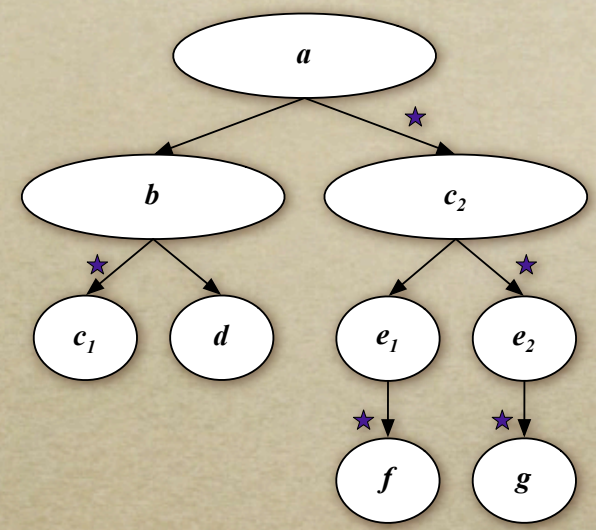
BSP-Trees





$g{:}e_2{:}c_2{:}f{:}e_1{:}a{:}c_1{:}b{:}d$