CPSC 314
Computer Graphics

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Hierarchies, A1 Spotlight

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Announcements

- My office hour will move (after this week) to Thursday morning 10-11am. Reason: I have another repeating Faculty of Science meeting scheduled for Thursday afternoons ☹
- Quiz 1 will be handed back later this week. Will discussion solutions in class after handback
- Assignment 2 available soon (probably by tomorrow)

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Today

- Assignment 1 Spotlight
- Wrap up of transformations

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A1 Spotlight

- Purpose: to share some interesting student work for Part 2 (“Creative License”)
- This is not meant to represent a “best of” .. i.e., this is not a competition. There are no extra marks for this. It’s just a sample of the great work submitted.
- If your assignment was picked it does not necessarily mean that it wasn’t as interesting. We only have a limited amount of time.

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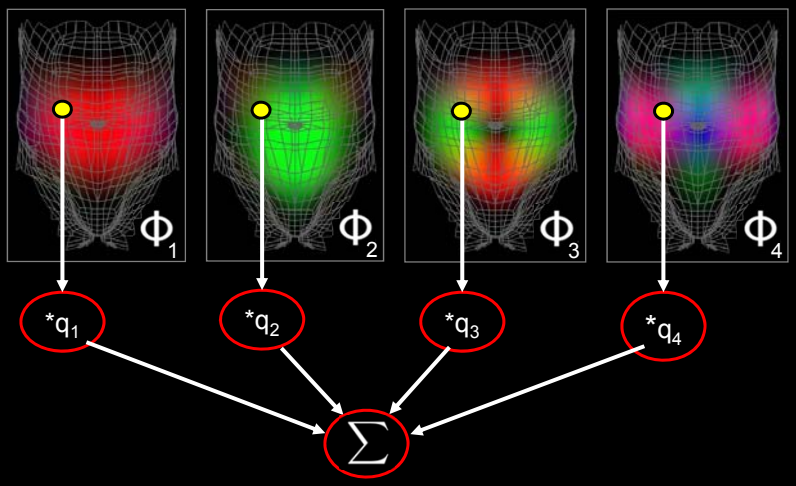
Dynamic Deformation with DyRT [James & Pai 02]

Dynamic
- physically-based modal deformation

Response
- to bone-based animation

Textures
- precomputed, sampled, and rendered almost entirely on graphics hardware

DyRT Vertex Program: Displacement Example



DyRT movie

Laparoscopic example

[James & Pai 02]

Transformations, wrap up

- Homogenous coordinates and transformations are fundamental to computer graphics.
- Scene graphs and hierarchies (brief intro)
- Three.js support for hierarchies
- Assignment 2

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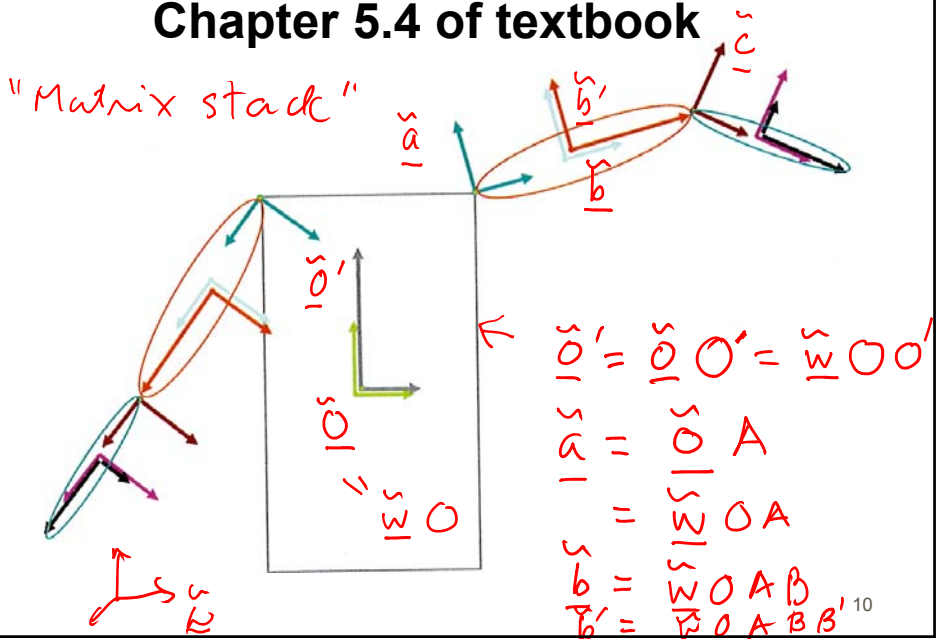
E.g. a robot hierarchy
Chapter 5.4 of textbook



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Three.js support

- Reviewed documentation at http://threejs.org/ especially http://threejs.org/docs/#Reference/Core/Object3D
- Object3D is the basic scene graph node

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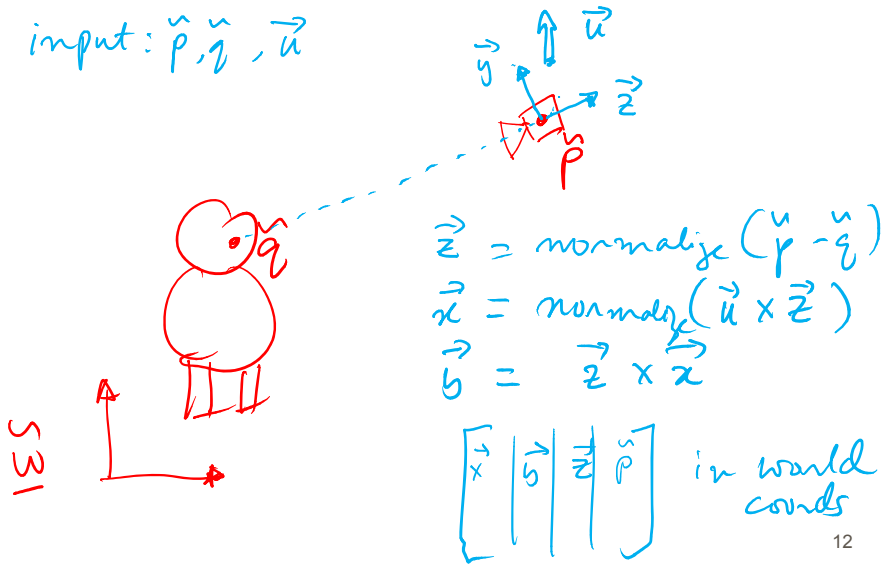
A closer look at "lookAt"



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A closer look at “lookAt”

- Book description in 5.2.3 has a bug, fixed in online Errata (make this and other corrections in your textbook copy)
  - z = normalize(p - q)
    x = normalize(u × z)
    y = (z × x)
- The book’s “lookAt” is the inverse of Three.js’s camera.lookAt() method
- The author is aware of these issues, will fix it in future editions

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