EECS 106B/206B
Discussion 19

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Action Items

- Proposal Feedback will come out tonight
- Lab 3 due this Sunday
- HW 5 coming out this weekend
  - Project checkpoint
  - Some short problems
  - Paper reading/questions
- Lab 4 coming out soon

Semester Roadmap

- 4/2 and 4/4: Finish soft robotics
- 4/9: path planning
- 4/11: Guest Lecture: Hannah Stuart (underactuated hands)
- 4/16: Guest Lecture: Anca Dragan (path planning and CHOMP)
- 4/18: TBD (Techcrunch)
- 4/23 and 4/25: Project Progress Presentations
- 4/30: Guest Lecture: Sergey Levine (TBA)
- 5/02: Guest Lecture: Ken Goldberg (TBA)
- 5/10: Project Poster Session / Demo Day

Papers:

- [Whitesides: Soft Pneumatic Glove](#)
- [Rus: Dynamic Control of Soft Robots](#)

Denavit-Hartenberg Parameters:
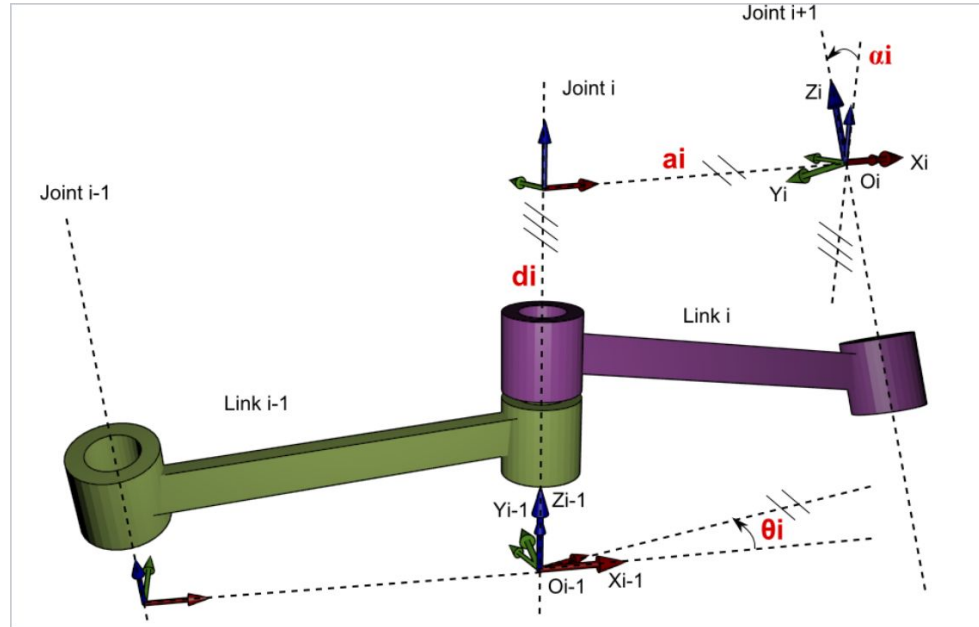
$$^{n-1}T_n = \mathrm{Trans}_{z_{n-1}}\left(d_n\right) \cdot \mathrm{Rot}_{z_{n-1}}\left(\theta_n\right) \cdot \mathrm{Trans}_{x_n}\left(r_n\right) \cdot \mathrm{Rot}_{x_n}\left(\alpha_n\right)$$

Denavit-Hartenberg Parameters

$$\text{Trans}_{z_{n-1}}(d_n) = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & d_n \\ \hline 0 & 0 & 0 & 1 \end{bmatrix}$$

$$\text{Trans}_{x_n}(r_n) = \begin{bmatrix} 1 & 0 & 0 & r_n \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ \hline 0 & 0 & 0 & 1 \end{bmatrix}$$

$$\text{Rot}_{z_{n-1}}(\theta_n) = \begin{bmatrix} \cos\theta_n & -\sin\theta_n & 0 & 0 \\ \sin\theta_n & \cos\theta_n & 0 & 0 \\ 0 & 0 & 1 & 0 \\ \hline 0 & 0 & 0 & 1 \end{bmatrix}$$

$$\text{Rot}_{x_n}(\alpha_n) = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & \cos\alpha_n & -\sin\alpha_n & 0 \\ 0 & \sin\alpha_n & \cos\alpha_n & 0 \\ \hline 0 & 0 & 0 & 1 \end{bmatrix}$$

$$^{n-1}T_n = \begin{bmatrix} \cos\theta_n & -\sin\theta_n\cos\alpha_n & \sin\theta_n\sin\alpha_n & r_n\cos\theta_n \\ \sin\theta_n & \cos\theta_n\cos\alpha_n & -\cos\theta_n\sin\alpha_n & r_n\sin\theta_n \\ 0 & \sin\alpha_n & \cos\alpha_n & d_n \\ \hline 0 & 0 & 0 & 1 \end{bmatrix}$$