Evaluation part 1
Papers reading & comparison

Will take place week 4: October 16th

- By groups of 3 students
- Read 2 research papers and **compare them**
- Either
  - 2 successive advances
  - 2 alternative solutions to the same problem

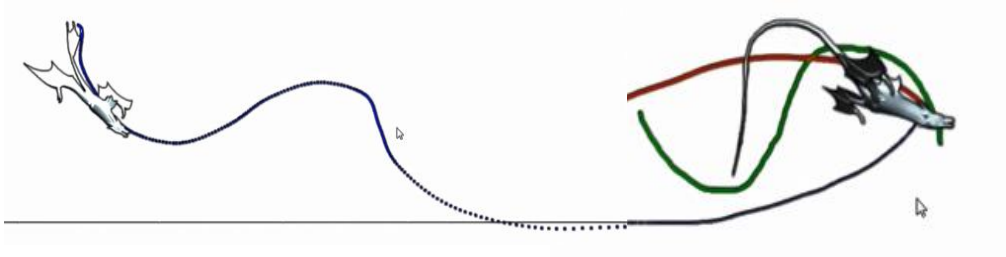
In your 10 mn talk (10 slides max – include short videos)

- Explain what they solve: input and output
- Identify contributions from each paper: novel, re-usable ideas
- Discuss the pro and the cons of each method

Email me to with student names + chosen group of papers

1. Expressive design of kinematic animations

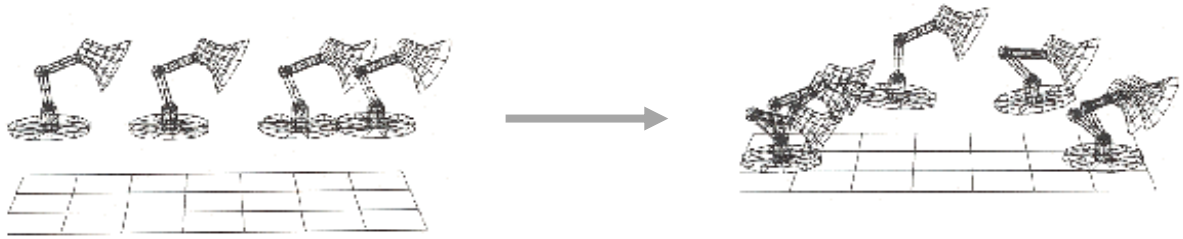
- **Space-time sketching of character animation**. Martin Guay, Rémi Ronfard, Michale Gleicher, Marie-Paule Cani. SIGGRAPH 2015



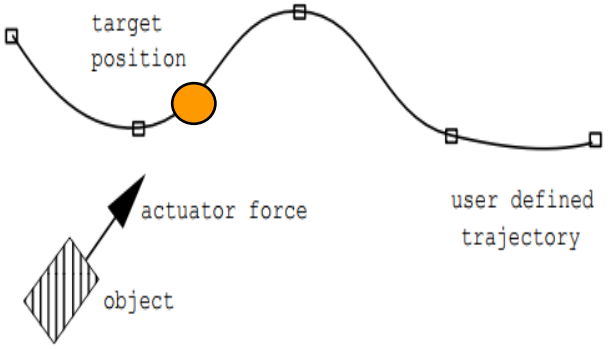
- **SketchiMo: sketch-based motion editing for articulated characters.** Choi, Blanco i Ribera, Lewis, Seol, Seokpyo, Eom, Jung, Noh. SIGGRAPH 2016

2. Early ways to combine physics with motion control

- **Spacetime constraints**. Andrew Witkin and Michael Kass. SIGGRAPH 1988



- **Scripting interactive physically-based motions.** Lamouret, Cani. Graphics Interface 1995.



3. Pioneer uses of neural networks & genetic algorithms for learning motion control

- Sensor actuator networks. Michiel Van de Panne, Eugene Fiume. SIGGRAPH 1993.

- Evolving virtual creatures. Karl Sims. SIGGRAPH 1994

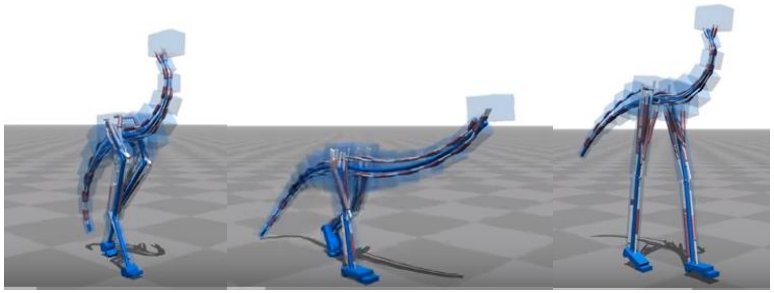
4. First controllers for humanoids: Manual controller design & optimization

- **Animating human athletics.** Jessica K. Hodgins, Wayne L. Wooten, David C. Brogan, James F. O'Brien. SIGGRAPH ‘95

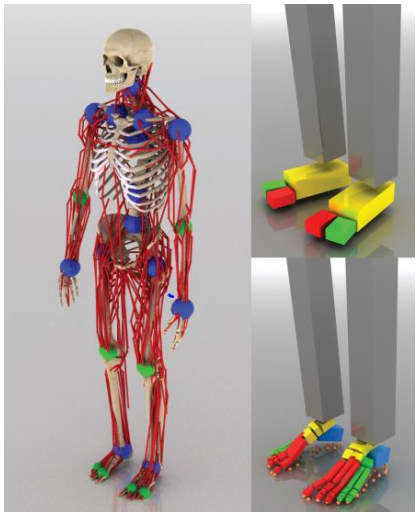
- **SIMBICON: Simple Biped Locomotion Control.** KangKang Yin, Kevin Loken, Michiel van de Panne. University of British Columbia, SIGGRAPH 2007.

5. How far should we use anatomy? Muscle-based motion control

- **Flexible Muscle-Based Locomotion for Bipedal Creatures** Thomas Geijtenbeek Utrecht University, Michiel van de Panne Frank van der Stappen, Siggraph Asia 2013

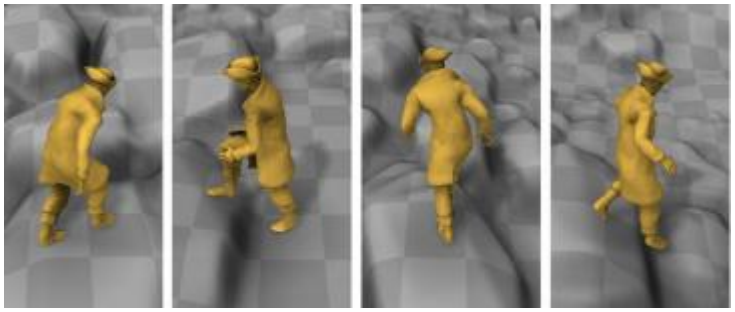


- **Scalable Muscle-Actuated Human Simulation and Control** Seunghwan Lee Moonseok Park Kyoungmin Lee Jehee Lee, SIGGRAPH 2019



6. Deep learning for motion control

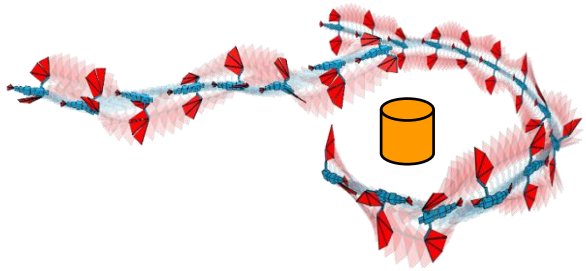
- Phase-functioned neural networks for character control. Holden, Komura, Saito. Univ Edinburg, UK. SIGGRAPH 2017.



- Mode-Adaptive Neural Networks for Quadruped Motion Control. Zhang, Starke, Komura, Saito. SIGGRAPH 2018

7. Learning how to fly

- **How to train your dragon: Example-guided control of flapping flight.** Won, Park, Kim, Lee, Siggraph Asia 2017.

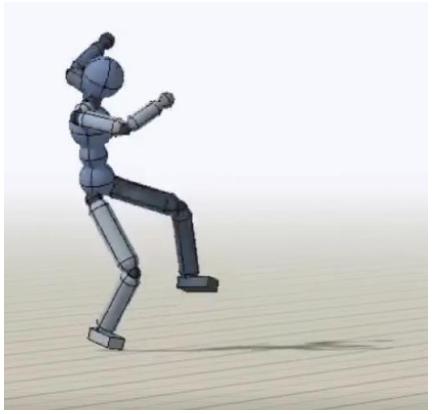


- **Learning to Fly: Computational Controller Design for Hybrid UAVs with Reinforcement Learning** Jie Xu, Tao Du, Michael Foshey, Beichen Li, Bo Zhu, Adriana Schulz, Wojciech Matusik, Siggraph 2019.

8. Should we learn by imitation or discover new motion?

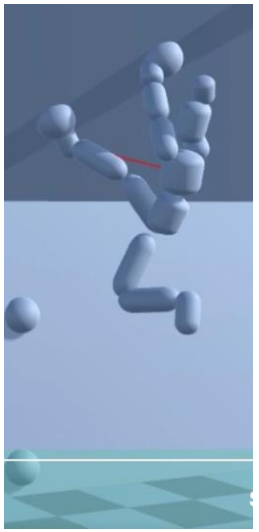
- **DeepMimic : Example-Guided Deep Reinforcement Learning of Physics-Based Character Skills**. Peng, Abbeel, Levine, van de Panne. SIGGRAPH 2018.

- **Learning Symmetry and Low-energy Locomotion**. Yu, Turk, Liu. SIGGRAPH 2018

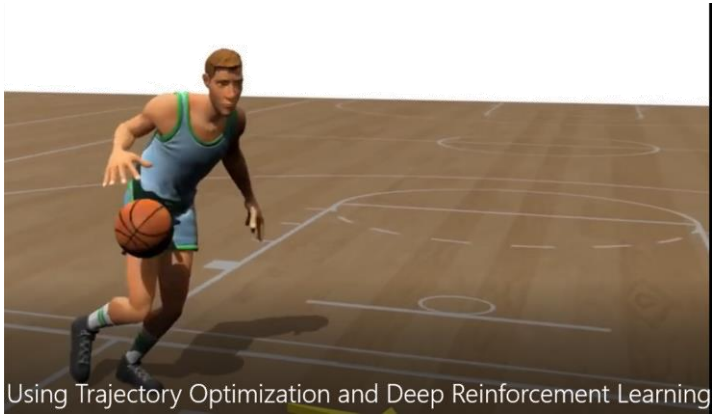


9. Acquiring sport skills

- **Discovering and synthesizing humanoid climbing movements.** Naderi, Rajamäki, Hämäläinen. SIGGRAPH 2017



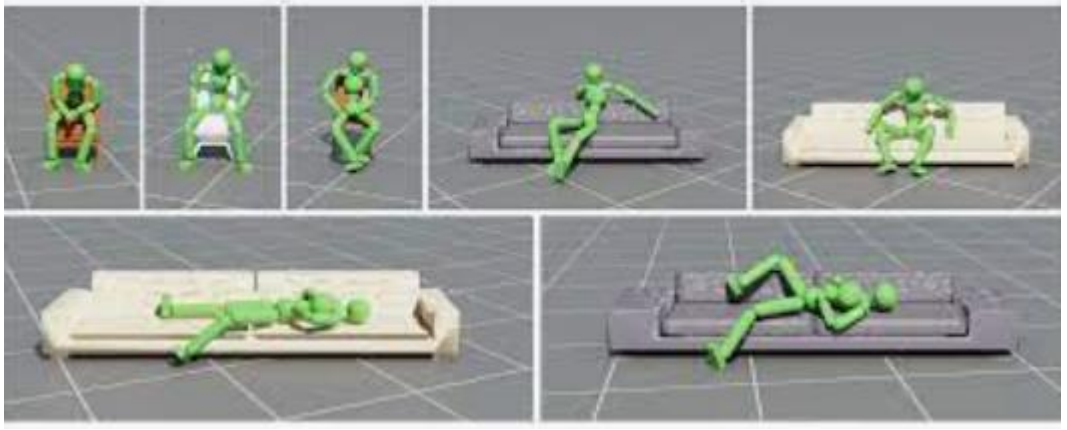
- **Learning Basketball Dribbling Skills Using Trajectory Optimization and Deep Reinforcement Learning**. Liu, Hodgins. SIGGRAPH 2018



10. Handling interactions with the scene

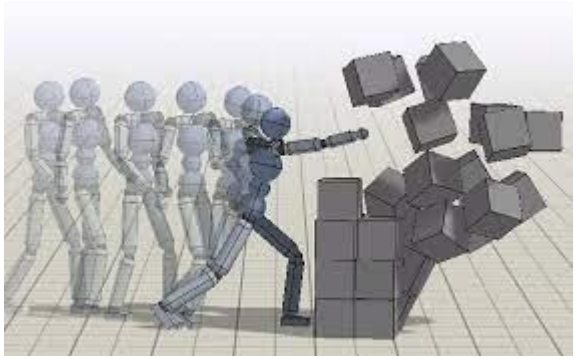
- **Neural state machine for character-scene interactions.** Sebastian Starke, He Zhang, Taku Komura, and Jun Saito. ACM TOG 38, 6 (2019)

- **Synthesizing Physical Character-Scene Interactions** Hassan, Guo, Wang, lack, Fidler, Peng. SIGGRAPH 2023

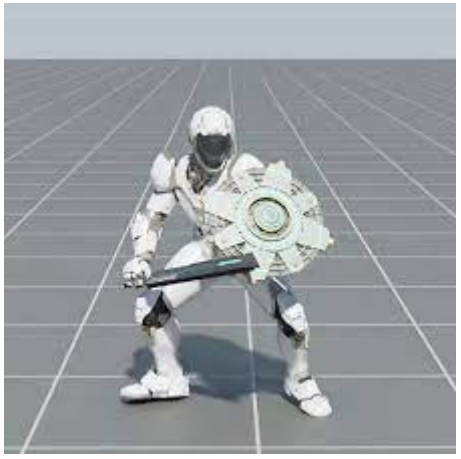


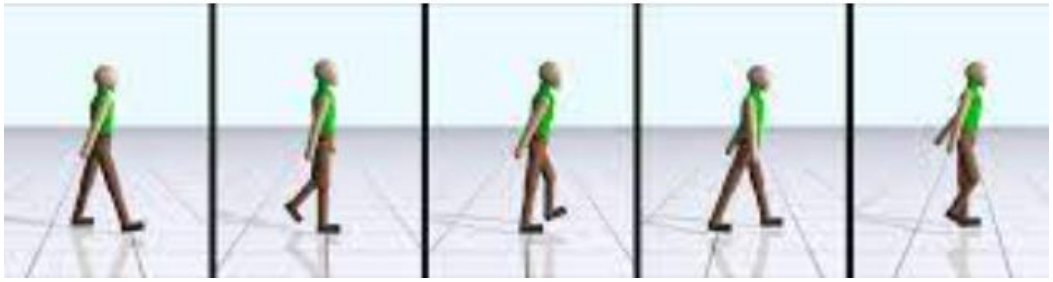
11. Learning style & combining motions? Deep RL + Adversarial networks

- **AMP: Adversarial Motion Priors for Stylized Physics-Based Character Control** Xue Bin Peng, Ze Ma, Pieter Abbeel, Sergey Levine, and Angjoo Kanazawa. SIGGRAPH 2021



- **CALM: Conditional Adversarial Latent Models for Directable Virtual Characters.** Chen Tessler, Yoni Kasten, Yunrong Guo, Shie Mannor, Gal Chechik, Xue Bin Peng *ACM SIGGRAPH 2023*.





More papers…

- **Synthesis of Biologically Realistic Human Motion Using Joint Torque Actuation** Yifeng Jiang, Tom Van Wouwe, Friedl De Groote, Karen Liu, SIGGRAPH 2019
- Local Motion Phases for Learning Multi-Contact Character Movements **Sebastian Starke, Yiwei Zhao, Taku Komura, and Kazi Zaman.** ACM Trans on Graph 39, 4 (SIGGRAPH 2020)
- **ASE: Large-Scale Reusable Adversarial Skill Embeddings for Physically Simulated Characters** Xue Bin Peng, Yunrong Guo, Lina Halper, Sergey Levine, Sanja Fidler. SIGGRAPH 2022
- **Deep compliant motion control**. Lee, Chang, Lee. SIGGRAPH 2022
- **Learning Virtual Chimeras by Dvnamic Motion Reassemblv**. Seyoung Lee, Jiye Lee, Jehee Lee