CPSC 526 Computer Animation Sept-Dec 2017

Project (25%)

The goal of the project for this course is to investigate a particular topic or research direction in further depth through an implementation. Use the language or development environment of your choice. The project consists of:

1. A one or two page project proposal, due by midnight on **Wed Nov 15**, 2017 submitted via email to van@cs.ubc.ca. Discuss your project in advance with at least one other person in the class, and mention this person's name in your project proposal. The point of this is to be able to benefit from some of the diverse expertise in the class. Good work is rarely done in isolation, and one well-placed piece of advice can save days of work. This will be worth 25% of the project grade. You will receive feedback with respect to the project goals and the tools you might use to achieve them. It may also be quite useful to receive feedback prior to submitting the project proposal, so please feel free to discuss your ideas with me in advance of the proposal submission.
2. A project report, due on **Tue Dec 12, 2017**.
3. 10-15 minute project presentation for the class on **Fri Dec 15, 2017**, 11am (room TBD)

Feel free to use the project as an opportunity to develop skills in working with datasets, interfaces, tool-sets, or related research problems that you find to be of interest. For some projects it may be quite useful to begin with 2D before moving on to 3D, or even finishing with the 2D setting. Develop your project in a progressive fashion so that you will have results to show even if you do not complete all the objectives outlined in your proposal.

Suggested projects are listed below. Please contact me for further details as needed.

(a) Your own idea.
(b) Implementation of algorithms and papers related to the class. For RL-related work, you can take this as an opportunity to experiment with RL Lab: https://github.com/rll/rllab.
If you go this route, be specific about what your goals are.
(c) Novel interface ideas for animation interfaces. There are many opportunities here. E.g., see ideas in "Interactive Control for Physically-based Animation".
(d) Simulation of a three-link arm that learns how to flip pancakes using optimization. Search for "Robot leans to flip pancakes".
(e) Simulation and optimization of a walking or galloping creature, using PyBullet and your own learning framework, beginning with policy search. By developing the creature and its controller (begin with a simple FSM and PD controls), you are likely to learn more about simulation and control, at least at a low-level, than by using RL Lab.
(f) Simulation of a simulated snake capable of crawling across simple and complex terrain.
(g) Develop your own articulated body dynamics simulator; optional: add basic control.
(h) Novel ways of visualizing motion, i.e., see "motion sculptures" on Google Images
(i) Develop physics-based motions or motion planning for skating or brachiation, i.e., monkeys swinging through trees.