15-464 / 15-664 Reference List for Planning

Planning

Go-to planners may be RRT's and expanded behavior trees:

Kuffner, James J., and Steven M. LaValle. "RRT-connect: An efficient approach to single-query path planning." In *Robotics and Automation, 2000. Proceedings. ICRA'00. IEEE International Conference on*, vol. 2, pp. 995-1001. IEEE, 2000. http://msl.cs.uiuc.edu/rrt/

Yamane, Katsu, James J. Kuffner, and Jessica K. Hodgins. "Synthesizing animations of human manipulation tasks." In *ACM Transactions on Graphics (TOG)*, vol. 23, no. 3, pp. 532-539. ACM, 2004. http://graphics.cs.cmu.edu/projects/planning/

Lau, Manfred, and James J. Kuffner. "Precomputed search trees: planning for interactive goal-driven animation." In *Proceedings of the 2006 ACM SIGGRAPH/Eurographics symposium on Computer animation*, pp. 299-308. Eurographics Association, 2006. http://graphics.cs.cmu.edu/projects/precomputed_search_trees/

What interest me are planning techniques that focus on creating natural motion. Why are few researchers in computer graphics studying these things?

Stulp, Freek, Erhan Oztop, Peter Pastor, Michael Beetz, and Stefan Schaal. "Compact models of motor primitive variations for predictable reaching and obstacle avoidance." In *Humanoid Robots, 2009. Humanoids 2009. 9th IEEE-RAS International Conference on*, pp. 589-595. IEEE, 2009.

Warren, William H. "The dynamics of perception and action." *Psychological review* 113, no. 2 (2006): 358. http://cns.bu.edu/Profiles/Mingolla.html/cnsftp/cn730-2007-pdf/Warren_P&A_PR06.pdf

Here is one interesting paper that puts similar concepts to use in computer graphics:

Yeo, Sang Hoon, Martin Lesmana, Debanga R. Neog, and Dinesh K. Pai. "Eyecatch: simulating visuomotor coordination for object interception." *ACM Transactions on Graphics (TOG)* 31, no. 4 (2012): 42. http://www.cs.ubc.ca/research/eyecatch/

What if we combined Warren's ideas about natural paths with an E-Graphs style of search?

Phillips, Mike, Benjamin J. Cohen, Sachin Chitta, and Maxim Likhachev. "E-Graphs: Bootstrapping Planning with Experience Graphs." In *Robotics: Science and Systems*. 2012. http://www.cs.cmu.edu/~./maxim/projects.html