

16-848 Hands: Design and Control for Dexterous Manipulation

Assignment 0: Paper/topic selection

Due Wednesday, Jan 24th

In this class, we will be covering classic papers, reference works from other fields, and cutting edge research related to hands and dexterity.

You will have the chance to explore in depth two topics of your own choosing -- first through presentation of a research topic or paper, and second through your choice of a final project. Follow your own interests and have some fun with this!

30% of your grade for this class will come from an in-class presentation of a research topic or paper. Your assignment due Wednesday, Jan 24th is to select which topic and/or paper(s) you would like to present. Note that you only need to present one topic or paper. However, I would like a list of your top 3 choices so that I can resolve conflicts between students should they arise. Here are the ground rules:

- Email me nsp@cs.cmu.edu a list of your top 3 paper and/or topic choices by the deadline.
- Earlier is better, as it will help me organize the syllabus and help make sure you get your first choice
- Papers can be classic references (e.g., “I want to really understand how the RCC device works” or “I want to review the design principles for the JPL/Salisbury hand”), they can be recent research hot off the presses, or something in between that is important or of compelling interest. Papers must be related to hands and dexterity in some way. If the relationship is not obvious, please tell me how you connect your choice to the class goals.
- If you have a topic in mind, but are not sure what paper(s) to cover, you can choose to present a topic, and we can select reading materials together. Examples of topics are “Human sensing capabilities,” “Compliance in robot hands,” “Survey of recent hand designs,” “Dexterous Soft Hands,” “Grasp planning,” “Interfaces for directing robot grasping,” etc. Be creative!
- Another option is to give an overview of the research of an individual or research group (or more generally, e.g., “What is going on at ETH Zurich/Harvard/KIT in robot hands research?”).
- Your in-class presentation can involve in-class exercises if it helps you investigate or present a point. Be creative, but clear these with me first.
- Haptics, graphics, biomechanics, virtual reality, prosthetics, etc. are all fair game, as long as you can relate your choice to the class goals.
- A great way to identify possible topics / papers if you don’t already have some in mind is to scan recent journal or conference tables of contents. IJRR is a great choice, as is “Robotics: Science and Systems” and the “International Symposium on Robotics Research.” You can check “Humanoids” and the “International Journal of Humanoid Robotics,” as well as IEEE-RAL, ICRA, and IROS. If you have some thoughts in mind and need guidance as to where to search, just let me know!