1. **robot hands to get data, how can can we gather that?**to collect the data. You only need your own hand. The kinect sensors is going to instrument. It can get all your joint angles.  
   Do we need to use it in the lab.  
   take the kinect actions with your own hand and than instrument it.  
     
   we want to give room, come up with some body movemnt sensors as a replacement for kinekt.  
   if you want to come up with different body mounted sensors.  
     
   you have libraries.  
   university is working at 50% capacity. We have lots of time constraints.  
     
   body variable sensors, you have to construct it.  
   we expect a nice blend between software and hardware implementations.  
     
     
   Action dictionary.  
   expected to use off shelf AI algorithsm, and than

**2)what is the interface between the Robotic hands and the ML algorithm**coppelia, make it really easy.

**3) could you provide us with a basline skeleton for the code of the project?**paper on imitation learning.  
In terms of code I was using the Glove, link to github.  
  
rudimentary code, for kinekt that performs

**4) resouces for theory / inspiration**

**5) we need to set up a date for weekly meetings**

**6) computational resources to deal with Deep Learning Algorithms?**

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embedded and network system group:

Vineet Gokhale expertise: tactile internet and wireless communications.

primary point of contact for this project

Ashu: sort of supervisor for this course.

Tactile internet, there is also Force, or tactile feeback that is sent.

Low latency demanding.

Typical audio and video communication, there is seconds of Latency.

You will be able to grab an object precicely only if the latency is in the order of 10-20 ms.

The current internt can not guarantee such latency, it’s not designed.

Speed of light is a barrier and can not go beyond that.

How do we enable

4. object of this project.

The idea is that instead of transfer position and velocity.

Why not enable an edge intelligence, a server that is very close to the human operator, and aserver that is close to the robotic operator.

This servers run some kind of intelligence in order to predict the signal and pass the information a bit before.

Building such intelligence requires one to learn how human operator moves his handsto perform an action.

Using this data. We can deploy this intelligence to introduce “negative latency”.

Telly operator that plays ping pong.

Ofc if the robot is in front of you. Np. Else you have lots of problems

First, we call it offline learning. Where the robot is in close proximity to the glove and the arm that you will be using.

Microsoft kinect sensors that is going to instrument all your arm. All the joints are going to be .

Whenver you make any motion. You will save the angles.

So that it can learn from that action so that the next time you perfom that actions you can mimick it.  
  
  
We have 2 AI blcoks, 1 at the end of the human, 1 at the robot.

Scenario, comes up.

The robot already knows what the human will do.

If the ball comes at a certain velocity with an incoming angle.

As soon as the human moves, giving some clue. The robot can predict what kind of shot the human is going to make.

The robot is going to cathergorize the action.

Classify the action to a low dimensional space.

Dictionary based AI.

Whenver you have a large high dimensional set of signals, and action is possible to parametrize them to a low dimensional space.

RBF kerknel to codify you entire possible set of functions.

Contrained to a set of context.

Anhy action corresposts to a low dimensional set of parameters.

The AI is going to mick that action before it perfroms. Then correct itself , reparametrzie itself, or maybe to a higher dimensional space.

The codified trajectory is .

Online learning. Codify trajectory has to be corrected.  
  
  
  
You will have a kinect to which you can measure robotic angles. Than the robotic hand can be replaced by a virtual platform. Simulated robotic arm that simulate the robotic movement.

Basic level of the student to complete. If you are able this well in time. You can construct the physical version.

1. Basic level: you must complete
2. Slightly advanced: from virtual environment to physical setup (any support, getting components it’s okay)