ABSTRACT RESUBMISSION
PROJECT TITLE: JENGA PLAYING BOT

TEAM MEMBERS
ABHAY VIKRAM (140040113)
SUJAY AGRAWAL (140070030)
UTKARSH CHAUHAN (140010033)
VISHWA JIGNESH VASANI (140010006)

DESCRIPTION

Our bot is designed to play the game Jenga (for more information about this game visit http://en.wikipedia.org/wiki/Jenga). The bot would consist of two mechanical arms, one for pushing a block and the other for grabbing and placing it on top of the structure. The user will choose the block to be removed, and will control the bot via joystick and direct it to remove the block.

In the following document, the term “Jenga Structure” or “Structure” will be used often. To give you an idea of what this means, a photo is included below

MOTIVATION

We came up with the idea to make this project as it seemed a very intellectually stimulating and technically challenging project. Also it gives us the opportunity to apply the technical skills in the real world.

IMPLEMENTATION

1. Our Project will be composed of two modules:
   1.1. Module A: It will consist of simultaneously building pusher and gripper and the mechanism to move them.

1.2. Module B: A program will need to be written which will control the gripper and pusher via joystick to remove the desired block.

2. The two arms will be fixed opposite to each other, and will have only two positions (0^0 and 90^0), which will be attained by a servo motor.

3. Hydraulic pistons will control the height of the arms as directed by the joystick.

4. User will choose the block to be removed. The arms will implement the move. The 'pushing' arm will have a finger to push the required block to a required distance. The 'grabbing' arm will then come into play, and use a gripper mechanism to grab the block, remove it from the structure.

MATERIALS REQUIRED AND ESTIMATED COST

MATERIAL	ESTIMATED COST (in Rs.)
Jenga	600/-
Hydraulic Piston	3x1500=4500/-(Two small, one large)
Servo Motor	700/-
Gripper	50/-
Microcontroller	?
Miscellaneous (building material, some other components)	3000/-
Joystick	500/-
TOTAL	9350/-

TIMELINE

Week 1: Designing and fabricating the framework on which the arms will move up and down.

Week 2: Controlling the movement of the pusher and gripper using the joystick.

Week 3: Achieving utmost precision of the mechanical components and the movement they perform.

Week 4: Combining the hardware and software components. Debugging and some final touchups.

To get a feel of what we are trying to achieve see this video https://www.youtube.com/watch?v=yD63f7MKPjI (Naturally, our attempt does not exactly follow what has been shown in the video)

DEMONSTRATION

Hopefully, by the time of the final review meet, we will have a fully functioning bot capable of playing Jenga versus a human opponent.

NOTE: If we get time after completing all of the above stated goals. We will try to make it fully automated.