**Chapter III. Background**

The project is to design a functional battle robot which should be controlled, from outside the ring. The main restriction of this project is the size and the specifications. The given allowance for the size of the bot is; it must fit in 18”X18” cube: but can have an extendable arm, flails, chains, clubs, baton, etc. and should weigh a maximum of 25 lbf. Also, there are weapons limitation which must be considered in designing; weapons such as flames or flaming liquids, chemical weapons like strong acids or bases, untethered projectiles, explosives or explosively-driven weaponry, blades, spears, or edged weapons are prohibited in designing the Bot. To overcome these restrictions, one of the best designing is to add a hydraulic wedge as an offense system. By adding a slanted wedge which can be operated by the fluid force, the bot gains the ability to flip the opponent bot. for this hydraulic wedge mechanism, the force that must given by the wedge to flip the opponent bot has to be calculated (with the weight of the wedge, weight of the opponent bot).

Another factor to be considered in designing the bot, is that the bot must also run over the obstacles in the arena while battling with other bots. The bot has to be designed in such a way it has a tolerance both up and down, so that if the bot can still run, even if it is flipped. As for the mentioned strategy, the design would be a bot with all the electrical components, and the hydraulic piston concentrated in the middle part of the body, and the body should be strong, must have maximum allowable tolerance, and functional.

When looking at the electrical side of the bot: the selection of appropriate motor, battery, turning mechanism, controlling mechanism of the bot are important. The motors should give adequate power to run the bot with variable speeds. For that the motors with gear train can be purchased. Next the battery, most important part; it should supply power to run the bot, activate hydraulic wedge multiple times, (anything I missed ?!). It is good to have one or two backup batteries. The servo would be a simple choice for the bot’s turning mechanism

(Please fill the programming and electrical system for our bot, and anymore information you want to add guys!!)