The third and fourth generation focused on two very different functions: frame and armor. For a period of time I thought I was going to make two different types of suits, one that gives the user strength, and the other offers protection. However, all diverging things have a dream of reunion. It was a winter night during my sophomore year, my friends invited me to go ice skating with them on a frozen pond in our school. I went there with them but weren’t brave enough to join them on the ice. I sat on a bench and watched them having fun skating. I was staring at their movements, and a cold breeze on my face inspired me. I suddenly thought of a design that surpasses the previous generations so far, one that combines the third and fourth generation perfectly. I ran back to my dorm and sketched down that design. But the number one reason why that design finally turned into a real product was related to a new skill I learned very recently: Solidworks.

The fifth generation suit was a keystone on my path that exceeded all my other previous projects so far. The usage of CAD and CNC made it a sign of me starting to transform from just making “toys” to designing industrial products. The goal for that suit was no longer just trying to imitate the functions of Ironman. I aimed for a low-cost functional bulletproof suit that can also enhance the user’s strength, but most importantly, can be mass produced right at the time. I wanted to be the “wizard” that turns fantasy to reality. Sure many companies were developing all types of exo-skeletons, but none of them were selling “armored robotic suits.” Beside the overall importance that fifth generation suit represents, there are also many worth mentioning details on it.

Modifications on the frame can be organized into two efforts: allowing the suit to completely open from the back and enabling more movements that the suit can perform. For the suit to open from the back, one modification was on the part that connects the body frame to legs. For all previous generations I placed it at the back for unknown reasons. Just switching the position of that part, I was able to increase the integrity of the entire front of the suit. Another modification was on the shoulders. For previous generations, arms were mounted with two plates that attached both front and back of the body frame. By attaching arms only to the front, I not only made it easy to put on, but also enabled a new movement at shoulders. All other modifications on the frame for quicker suit up were based on the fourth generation suit. New designs for the armor were also influenced by the making of generation 4. I replaced balsa wood frames with machine cut aluminum frame to reduce manufacturing time, changed the resin plus fiberglass combination to fiberglass tape since there are no longer any curved surfaces, increased layers of KEVLAR for better protection, and abandoned the use of plastic on the surface because it was heavy and didn’t really do anything. Every armor plates on that suit was connected to the frame by strong Velcro to increase modularity. When an armor plate is damaged, it can be quickly replaced. I was at a peak in terms of the enthusiasm for designing. I thought I was on the right path and was ready for another explosion of ideas. Unfortunately, I had to stop those projects. (Refer to SAT and MIT: )