

Getting Active: The First Year at Botball

I. Introduction

“Welcome to the Explorer Post 1010.” These were the first words that I heard as I walked into the room where the group’s robotics club was meeting. Practically overwhelmed by the sheer number of nerds, new members and I were divided into classes that discussed how to code and design robots for an upcoming “internal” competition. In the short span of a few classes, I learned what the difference between a motor and a servo was, and how to use *mav* versus *mrp*. By the time the internal competition came, I was full of all sorts of random robotics knowledge. Unfortunately none of this information was used as I sat on the sidelines due to my inactivity. Throughout the course of the internal competition, I observed the “tractor dragon” take shape and begin to move around on the board. Only when it was necessary to set the robot up for another run did I actually get to look at the robot in close detail. To be specific, I was barely involved with the end result, the “tractor dragon.” Later on between the internal competition and the actual Botball season, I became more involved in the Botball team. During the competition season itself, I designed a scissor lift system that was to be used in order to reach the 15 inch tall “island” in the middle of the board. Thus the question “What changed between the internal competition and the actual Botball season?” arises.

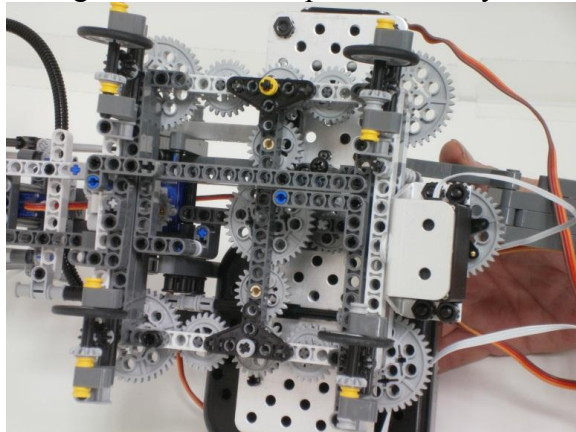
The answer is that I actively sought to get more involved as a freshman in Botball. I resolved to participate fully, and soon learned that various actions could be taken in order help one become more involved in Botball and with robots being developed. Of these ideas, one of the most important is taking initiative. An individual cannot get involved if he/she doesn’t actually engage the team. It even helps if one just gathers different LEGO parts for senior members. Another idea is that one should always be prepared to accept making mistakes. New ideas should be explored before they are discarded or modified. New individuals to a team should also try to attend all of the team meetings. Such an action does in fact get noticed as it ensures that information is given to all of the team at once. Finally, people who are enjoying their first year at Botball should demonstrate a willingness to learn by engaging senior members and by observing how they solve certain problems.

II. Initiative

As stated before, actively participating in Botball requires taking initiative. This means that one should offer to take control of certain designs or ideas, or to solve a problem pertaining to the robot. Such a concept does not involve forcibly taking over, but instead one should state his/her ideas as he/she offers to help more experienced members. To be honest, sitting around and asking for assignments will never get an individual involved. Instead, freshmen in Botball should get involved by just collecting parts to be used for the robot in order to integrate themselves into the team and familiarize themselves with robot. Not only does this action allow individuals new to Botball to exercise their problem solving abilities and to make other team members aware of them, but new members often offer a fresh look at the common challenges

presented by the competition. Finally, new members of a team may have different ideas when it comes to developing and integrating systems onto the robot(s) being used. Such thoughts provide new insight to the problem, and by discussing their thoughts, new individuals can learn how certain problems can be quickly solved.

A good example of taking initiative involves the scissor lift that was discussed earlier. I offered to develop it for the iRobot Create® after experimenting with a model created by a friend. I believe that I was able to gain control of the development of the scissor lift by offering to prepare it for testing and use on the robot. Eventually, the lift was completed, but the lift's inertia turned out to be a major issue, as the motor did not have enough power to lift the entire contraption. As a result of my initiative, other team members recognized that I could help solve problems that were presented throughout the season. More recently, another freshman took initiative on our team and helped in the development of a crab drive. By working alongside various senior members, he eventually was able to become one of the main people operating and controlling the robot. He was able to effectively integrate himself into the team and the competition in general by taking initiative and exhibiting the ability to think of unique solutions during the internal completion held by the Explorer Post 1010.



Crab Drive; wheels change direction through the use of an H bracket and a micro servo

III. Failure is Part of Botball

Though actively being a part of the group is a major part in helping one's chances to interact with the robot and the team, new members should be prepared to fail multiple times before they are actually able to succeed. The reason is that robots always have issues (under the realities of Murphy's Law). Often, such issues can result from details that the designers weren't even aware of. As a result, it is usually a good idea to discuss problems with teammates despite the fact that it means that one must admit they made a mistake.

Acceptance of failure is an area in which new members to Botball frequently fall short. The competition isn't about making a name for one's self, nor is it about developing a reputation as the best within one's field. Instead, one must realize that new individuals involved in Botball do not have the same experience as those that have participated for more than a year. As a result, many designs or systems developed by new members of a team may contain various flaws that more experienced members have already taken into account. Such an effect can often make new individuals nervous about creating designs as the flaws are often pointed out without sensitivity. Finally new members need to realize that people don't care all that much if an individual messes up a design. Teammates are almost always eager to help redesign the system and possibly add their own ideas as they attempt to make it better. Besides, modifications aren't that hard to make when more people are offering ideas.

IV. Importance of Attendance and Willingness to Learn

It is highly recommended that new individuals attempt to attend every meeting that is scheduled by their group. It is completely understandable that one does not wish to constantly put a nerdy club ahead of friends, school and social events. However, one will miss developments made by the team and announcements given by mentors or other teammates. I do admit that such an issue can be partially solved by having someone inform all individuals that missed a meeting about everything that happened. Yet new members must realize that if they are not present at a robotics meeting, then they won't be able to affect the actions taken or decisions made. It is highly possible that the team might redesign or completely change a major part the robot. Such is the nature of working with people in a collaborative group. By not attending meetings, new members put at risk major opportunities to work with club members that have a vast amount of experience and knowledge. Since it is highly possible that these individuals will not be present next year, new members should attempt to take advantage of all their time with experienced members.

Appearing at meetings may not be the only action that leaves a good impression. Often times, individuals within the club seek those who are extremely willing to learn and demonstrate new abilities as they explore the various options within Botball. Overall, one can show such willingness if he/she actively engages more experienced members and gathers information about the robots and how they operate. Many senior members enjoy explaining their thoughts and ideas as new members help them create the robot and modify the systems in order to complete the team's goals. Such an action not only allows new members to examine the robot, but it is possible for them to exercise problem solving skills and possibly provide a better solution than the one that the senior member was attempting to integrate. Finally, individuals who have just begun participating in Botball can become more involved by exhibiting enthusiasm and a willingness to consider new ideas. Such actions will help them become more integrated into a team as such actions convey versatility and the ability to adapt to new situations. Besides, Botball is all about learning, no one becomes better at creating a robot by just sitting around. Learning helps new members establish a base knowledge that they can build on during later years, while helping them become more active as the competition season progresses. However, being too pushy and demanding that seniors "babysit" them and explain their every action can be a bit extreme.

In order to provide an accurate example of how not to be insistent and possibly annoying, I wish to describe a situation last year involving the lift system that I have previously mentioned. Since the scissor lift was rather weak, it was necessary to reconsider the idea and redevelop the basic systems. A senior within our group, Steven, decided to take over the project since I, as a new member, did not truly understand the idea of KISS. After he worked on the lift system for a single meeting, I approached him and began to ask him exactly what he planned to do in order to support the weight of Botguy. After examination of the parts that had been developed, I was informed that he had adjusted the entire system such that it was powered only by a single winch system. He quickly explained the physics behind the changes he made as the scissor design was molded into a two platform system. Steven also showed me how he was attempting to mount the first platform to long metal bars, each of which would be held within tight brackets attached to the second bracket. I later worked with him in order to create a long arm that swung out and

grabbed Botguy through the use of a mechanism that looked very similar to a scythe. Throughout this entire development period, I continued to ask Steven to explain small ideas as we worked on the robot. Eventually, I was able to understand exactly what he had done by modifying the design of the lift system, and exactly how it worked. I wish to point out that during this experience, I did not pester him for details, nor did I demand he explain all of the changes he had made. Instead I allowed myself to become more involved in the system, and I showed my willingness to examine the changes.

V. General Notes

Unfortunately, sometimes attempting to work with seniors and exhibiting one's enthusiasm for learning is not enough to gain involvement on a team. Sometimes it is only possible to become involved with the robots by taking the jobs no one else wants. Instead of attempting to become involved in a specific activity and failing, it may be better to accept a job that many people dislike in order to earn respect and acceptance. In fact, since fewer people willingly seek these tasks, it is possible to work more quickly in order to solve a problem or challenge. These jobs also put a lot of responsibility on a new individual's shoulders. If one succeeds, credit is usually given to the individual who worked on the project instead of to the entire group. However, most of the jobs that people don't want involve some form of documentation, whether it is documentation or the onsite presentation. At the same time, these jobs are extremely important as they account for a large percentage of score that the team receives during the formal competition. In my personal case, I decided to do the on-site presentation since my entire team refused to assist the other person willing to speak in front of the judges. When our small group received a high score, the rest of our team was willing to acknowledge our success as public speakers and presenters. Finally, since these jobs often consist of smaller groups working together, new individuals can easily express their interest and often times get to know the people within the group better than if they attempted to work in the design or coding groups.

Next to taking the initiative, a major part of getting active in Botball as a new participant is actually cooperating with others as a group. In general, when competing in Botball, it is difficult to complete two robots and the necessary coding. Added to the fact that documentation needs to be completed by specific dates, it is almost impossible for any individual to complete everything. As a result, teamwork is a necessary part to the success. Senior members within a team usually acknowledge this and appreciate the help given by other members. However, new members must be willing to cooperate and accept new ideas if they want to be accepted as a major asset within the team. Individuals who are new should also consider the fact that others view problems in unique and different ways. Also, members of every team should attempt to complement each other's strengths and weaknesses. This idea emphasizes that new members should work with other individuals in order to balance their inexperience with their new ideas and methods.

Finally there are a few general guidelines that new members should follow as they attempt to become active within a Botball team. First of all, a new member should avoid being aggressive. Such an action will often cause other members to view the individual as a "control freak." Individuals should also seek to make as good an impression as possible within the first month of participating in the Botball competition. The reason for such an idea is the fact that not many people within the team actually know who a new member is and how he/she works. Overall, bad impressions can drastically affect the impact the individual has on the team and the

robots. Finally, I cannot emphasize enough how important cooperation is in order to become a major member of a Botball team. New individuals should not attempt to take control of groups in order to force their ideas, as all goals and thoughts should be examined as strategies are developed and robots are created.

VI. Conclusion

Being an active member in Botball is hard enough, not to mention the fact that new individuals have to show their interest in Botball and their devotion. New members should attempt to offer to take jobs and help other members without being pushy and aggressive. Overall, becoming a major member of a Botball team, whether one has been participating for years on the sidelines or is completely new to the team, involves being active and offering to take jobs. Even doing unpopular tasks such as documentation helps one become more integrated into the team. Finally, the ideas described within this entire passage can be applied to various forms of daily life, including actions involving internships and later on actual jobs.