

Source Control

1. Introduction

Source control, or committing, is commonly used among programmers because it provides additional security to ensure current and previous versions of code are stored safely, while also allowing collaborative methods that increase the efficiency and quality of the programming. This method is especially beneficial to robotics teams, as it provides organization to the analyzing, testing, and incorporation of various ideas in a teams' approach to their code.

2. Benefits

Some benefits of using source control are having access to earlier versions of code, being able to back-up code in multiple locations, giving credit to the author, and tracking the changes being made to the code.

2.1. Accessing Earlier Files

Committing code to an online site, such as GitHub, allows programmers to access earlier versions of the code in the event that the team would like to resort to an abandoned version of the code.

2.2. Backing-Up in Various Locations

Committing code to an online site automatically makes multiple copies of the most recent version of code. Therefore in case of emergency, there is a copy of code saved both to one's personal computer and to the online site. If either the computer were to stop working or the internet was inaccessible, the changes and latest version of the code

2.3. Credit Given to Author

Another benefit of using source control is that while committing code, the author is credited for the code they wrote. Also, for avid programmers, this feature enables him or her to discover who is to blame for any faulty code.

2.4. Tracking Changes Made to the Code

When one commits a piece of code, the software automatically saves the updated edition and shows the changes from the previous version in comparison to the newly updated version. This permits any absent team members to follow the process through which their team reached the current objective.

3. Branching code

Another advantage of using source control is being able to branch out the code and have multiple people working on a piece of code simultaneously. This enables the team to be more efficient by being able to solve challenges and problems with the robots faster.

3.1. Allowing Editing to Different Parts of the Same Code

Source control allows a team to have multiple people working on the code at the same time, allowing them to work in different parts of the code. This permits a team to edit various parts simultaneously and therefore fix the bigger problem at a faster pace. For example, instead of all the programmers only being able to focus on where the robot is going on the game board, the team can now have other programmers work on coding the robots' motors or servos instantaneously, cutting down the total amount of time working on coding.

3.2. Allowing Different Approaches to Copies of the Same Base of Code

Using source control allows different team members to work towards the same objective by exploring different strategies using the same foundation of established code. Source control allows a team to work with copies of a skeleton of code and have different people experimenting with their ideas. Source Control then allows users to compare different versions and requires them to choose the best option, which will then be saved and uploaded. This feature is very valuable as it allows numerous options for how to proceed in the planning and objectives, ensuring that the team will end up with the best code possible.

4. GitHub

GitHub is a website where code can be saved and shared with others. This allows for multiple people to be able to collaborate and learn from a person's or a team's code.

4.1. Push/Commit

When code is being committed it means that it is being sent and saved online within software such as GitHub. This is helpful in the case that one's computer stops working, as all of the code being worked on is already saved online.

4.2. Pull New Code

“Pulling” new code means replacing the code on one’s computer to the present code that was saved online. This allows team members to stay up-to-date on the code made by other team members. It also enables code to be accessed by different computers.

4.3. Local Commit/Push

Committing code “locally” means saving a piece of code to only one’s computer rather than saving to both one’s computer and to the internet. This function is used when internet is not accessible or when someone is working on small, quick alterations in the code that will be committed to the internet as well.

5. In Conclusion

Source control is a very valuable tool for robotics because it allows one to save code both online and on a local computer. It also allows team members to collaborate on code and take different approaches when dealing with a challenge faced by the team without compromising previous versions of code permanently. Using source control with teams help make revised code easier to organize and understand.

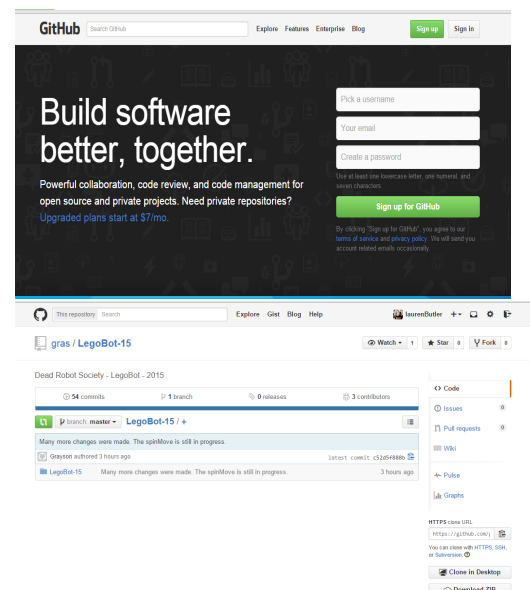
6. How to Create a Team GitHub account!!

Step 1: Go to www.github.com

Step 2: Create a username, password, and enter your email

Step 3: Start searching and adding your code to your new GitHub account.

Remember that GitHub is a free website and a great tool for a robotics team. It allows a team to see every change they have ever made in the code from the beginning of a project.



7. Appendix

"GitHub." *GitHub*. N.p., n.d. Web. 3 June 2015.
<<https://github.com/>>.

"GitHub Help." *GitHub*. N.p., n.d. Web. 3 June 2015. <<https://help.github.com/articles/adding-an-existing-project-to-github-using-the-command-line/>>.

"Apache Subversion." *Wikipedia*. N.p., n.d. Web. 3 June 2015.