BioBrick parts provided. "BioBrick Puzzle" is a puzzle game played for the purpose of learning BioBrick Standard Assembly easily and enjoyably. In this game, the challenge is to make a complex BioBrick part from several simple BioBrick parts provided.

"Gene Network Game" is designed for learning basic ideas of gene regulation and networks. Players aim to create a gene network capable of producing the protein dynamics required at each stage. We implemented the stage editor and they can also obtain preliminary knowledge about modeling and creating simulations.

Software Tools for iGEMers: BioBrick/Project Search & Tutorials

Eiichi Matsumoto, Masahiro Kiyota, Eri Awazu, Tsukasa Nakamura, Kotaro Iwata, Craig Hamilton, Daichi Tamaru, Masahiko Shimizu

Making Project Planning in iGEM Easier

We think the most important process in iGEM is planning a project. However, a lot of iGEM team members spend too much time looking for information required for planning. For example, they may spend a lot of time on processes such as learning what BioBricks are, looking for past projects that may have done something similar to an idea a team member has, and then looking for parts that may come in handy in making this idea happen.

So, we decided to improve this situation by creating software that allows more time to be allocated to the actual planning. We have created tutorials to obtain essential knowledge on iGEM easily and two search systems to save time and labor. In addition, we've made all our software available on a web browser to save time.

BioBrick Puzzle

"BioBrick Puzzle" is a puzzle game played for the purpose of learning BioBrick Standard Assembly easily and enjoyably. In this game, the challenge is to make a complex BioBrick part from several simple BioBrick parts provided.

Text-based guides

We also implemented text-base guides to help beginners gain background knowledge useful to understanding concepts covered in the games and complement and improve education effects.

BioBrick Search

BioBrick Search is a novel BioBrick search tool with the aim of providing more efficiency and reliability in searching existing BioBrick parts. The current search at partsregistry is not very useful. The problems we spotted are:

- The results are ordered by ID and not by relevance to your query or reliability of the parts
- Information given in the results list is insufficient to judge whether it's the BioBrick you need

BioBrick Search resolves these issues and, in addition, has the following features:

- Filters the users can set by various conditions
- Can be accessed from a web browser without installation

Result

With BioBrick Search, you can get the full list of BioBricks that match your query. They are sorted by the combination of following 3 factors: reliability, relevance and popularity of the BioBrick, so that the parts you are looking for are likely to appear higher in the result list. You can filter the result by various conditions (e.g. year submitted, team name, category). When you find a part of interest from the list, you can also access the detailed information on that BioBrick such as the sequence, the composition, related parts, etc.

Past Project Search

Past Project Search is a search tool for past project wikis. This tool searches all team wikis and abstracts throughout the years and displays the results with presentation material and school details. Until today we could not search for past projects across different years.

You also had to reach team wikis using only tracks, regions, and team names from a list that does not contain any specific information about the project.

Result

Now, you can search for past projects across multiple years. You can narrow down search results according to track, medal, year, award and region. You can also get easy access to a team's information from the search results page; for example their project title, project abstract, and school details. In addition, you can access past team presentation slides, video, and posters from this page, which in the past had to be accessed from the Jamboree results page. These search results are derived from the database at our own server. The database was built with scripts that contain any specific information about the project.

Collaboration

We made BioBrick Search publicly available this August. Since then, we got access from 16 different countries and they in general gave us favorable responses. The UT-Tokyo team, among others, told us they successfully found the appropriate parts from their functions using our tool. We made improvements based on the feedback we received from users.

Background

For many teams, the majority of team members are new-comers, who often do not have enough background knowledge on iGEM and spend a lot of time learning about it. We developed the tutorial to assist those beginners. The subjects are BioBricks and genetic networks, which all teams must learn to start considering their project but currently lacking adequate educational material.

Tutorials

BioBrick/Project Search & Tutorials

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