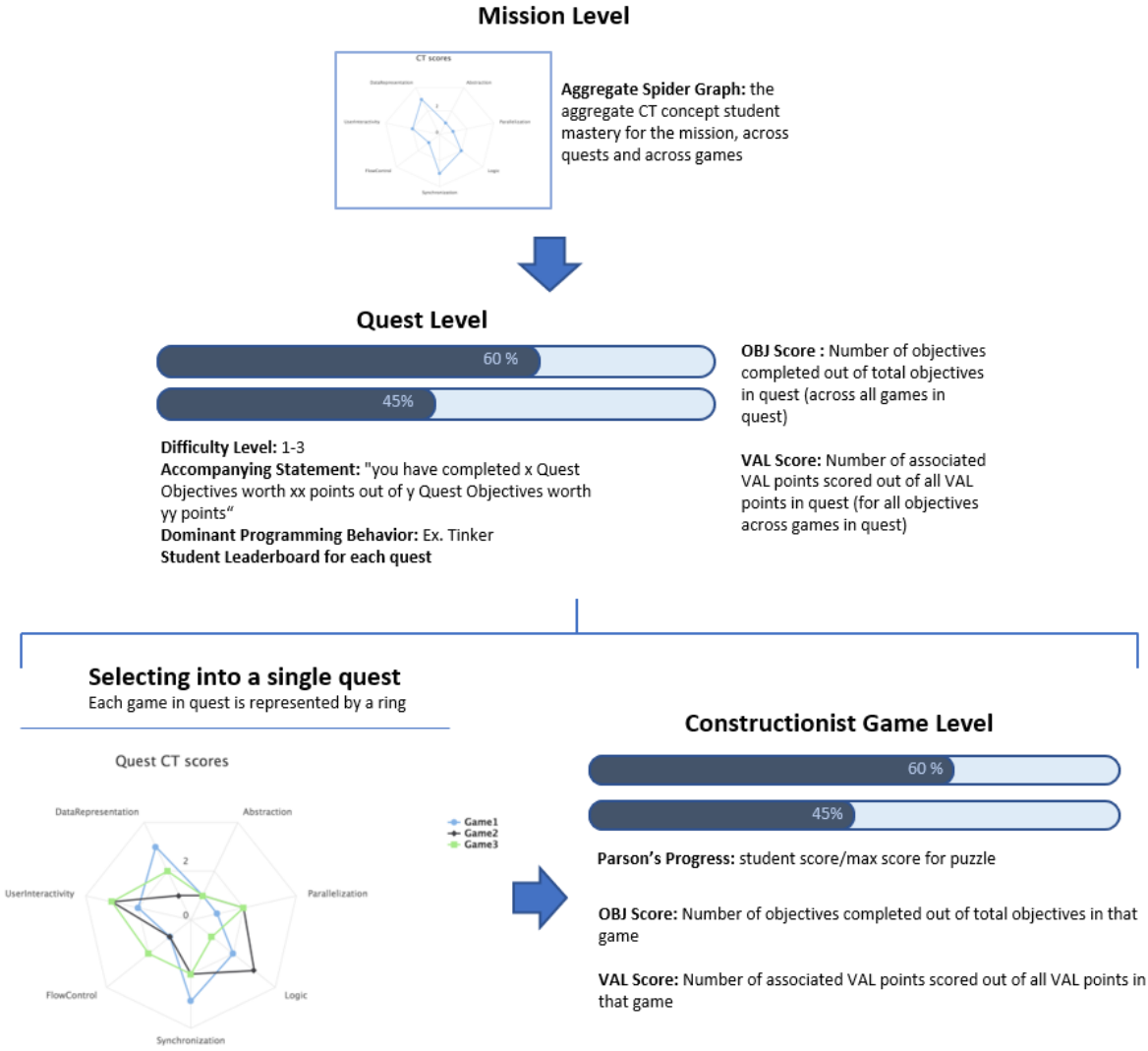
Spring 2018 Midterm Report

SAGE Game Affinity Space - Learning Metrics
Bicheng Jiang, JiaYing Yang, Lillian Zha

Abstract:

The work our group has done so far addresses the Learning Metrics feature of the Gameful Affinity Space Epic. Our primary concentrations during this period have been displaying progress bars and spider graphs on the student interface to help a student gauge their performance. We would like to continue revising the data-model and also consider improving the UI/UX of the learning metrics, or "statistics" portion of the affinity space.

Architecture:



Implementation and progress:

In terms of specific user stories, we have created progress bars for each quest that display percentage of objectives completed out of total of objectives, and also percentage of VAL (Visual Assessment language) points completed out of total VAL points associated with the objectives in each quest. Another user story that we have focused on is displaying the CT (Computational Thinking) Concept mastery of a student for each quest in the form of Spider Graphs which are automatically generated from the results of Hairball analyses at the Game level. The spider graphs are displayed in both the Student's home page and also the Quest page for each quest which the student has worked on or completed. The values taken by the spider graphs at the mission level are the average values of the scores for the CT Concepts at the quest level (which is an aggregate score from the game level). At the quest level, the spider graph displays each game result as a differently colored ring. Currently, we are using mock data stored in the servers, as we are still considering the organization and structure of the mLab data. For the sake of clarity, we have changed the GameID string that is currently displayed to the Game Name, and we have also renamed the metrics page to "Statistics". In addition, we have made some preliminary wireframes for the teacher interface showing summary statistics of students' quest and mission performances (in the form of scores and spider graphs).

Limitations and Assumptions

Our efforts up to this point have largely depended on understanding the underlying data model and the relationship between how scores or metrics are calculated between different levels (game, quest, mission, difficulty). Generally, "aggregate" scores have been interpreted as the average of corresponding scores in a game or quest unless otherwise specified. We have also proceeded so far with the assumption that future work will be done to standardize the data formatting between different groups accessing the same areas of data.

Upcoming Work

In the coming weeks, we would like to move away from mock data and work towards making the data more easily accessible from mLab, as well as discuss with other sub-teams potential standardization of data formatting. Accomplishing this will make work on other user stories within our feature much more efficient. Along the way, we believe it would be beneficial to implement better metric descriptions that explain to students what their performance means at the game, quest and mission level, especially for the seven CT concepts. Lastly, we have had discussion on using Material to implement new design work, but we save that effort for later.