InsightVis: Course Dashboard For CPSC 310

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Background - The class

- CPSC 310 is a project-heavy course, and a requirement of the Computer Science Major

- Roughly 180 or 360 students per term working in pairs, meaning we have 90 to 180 teams

Background - The project

- Students are tasked to build a simple data storage and query language system

- Students are marked by their project's ability to pass a suite of automated tests, and their own tests' coverage of their code

Background - Test features

- Tests require one or more features of the system to pass.
- Students get feedback on how well they are performing in relation to these features

Background - The data

- We have records of test results for all the students commits (100MB JSON file for one term)
- We also have their git repositories, which means entire project histories (separately on GitHub)
- One challenge was be pre-processing this data into something friendly

Target use cases

- Enable course staff/TAs to get an overview of how the class is doing
- Identify exceptional or struggling teams
- Find correlations between project qualities and performance
- Provide an overview of how an individual team is doing to guide TA assistance
- (Stretch) Learn more about the test suite used in the course to identify improvements

Demo

Changes and lessons learned

- Originally intended for the class view to be just the configurable scatterplot, and the team view would be a flow/sankey diagram. A tests view was a stretch goal.
  - Implement in D3

- Would have been less information, less useful, and harder to use quickly

- Moved to value more functionality over doing it ourselves, accuracy over coolness
  - Used Plotly.js
  - Aligned scales everywhere

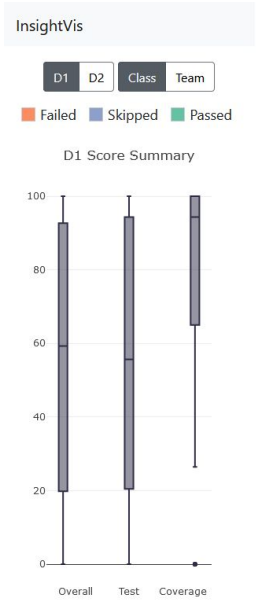
Limitations and future work

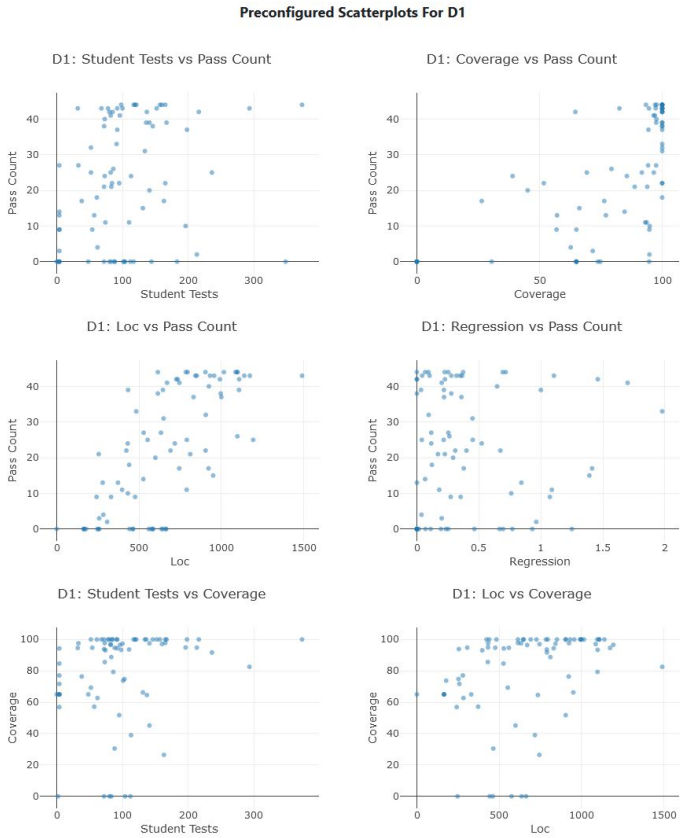
- Scaling for different screens, data sizes
- Add search by student name or csid to team view
- Broadly make the UI look better
  - E.g. Different background for the sidebar, nicer mouseover highlighting
- The hard one, actually integrate into our dashboard and use live data from the database

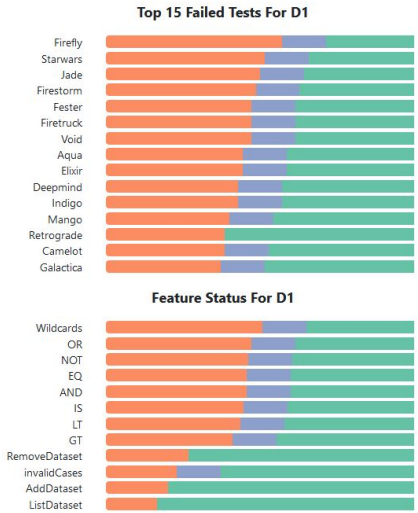
Questions?

Something went wrong, backup images!

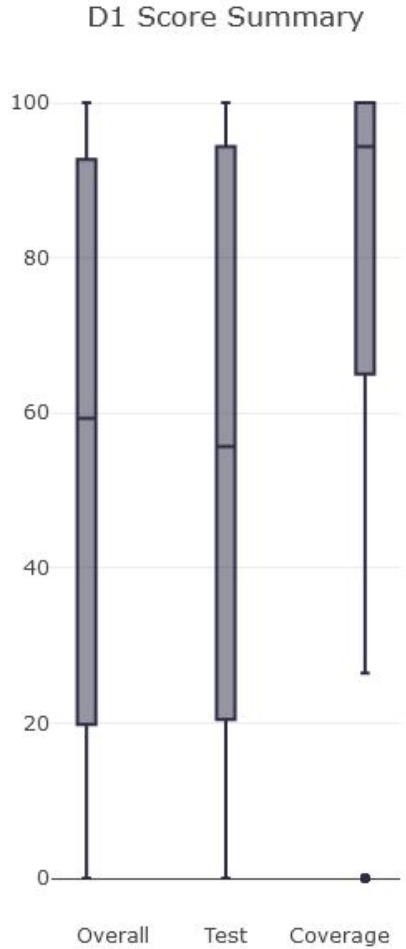
Class Overview



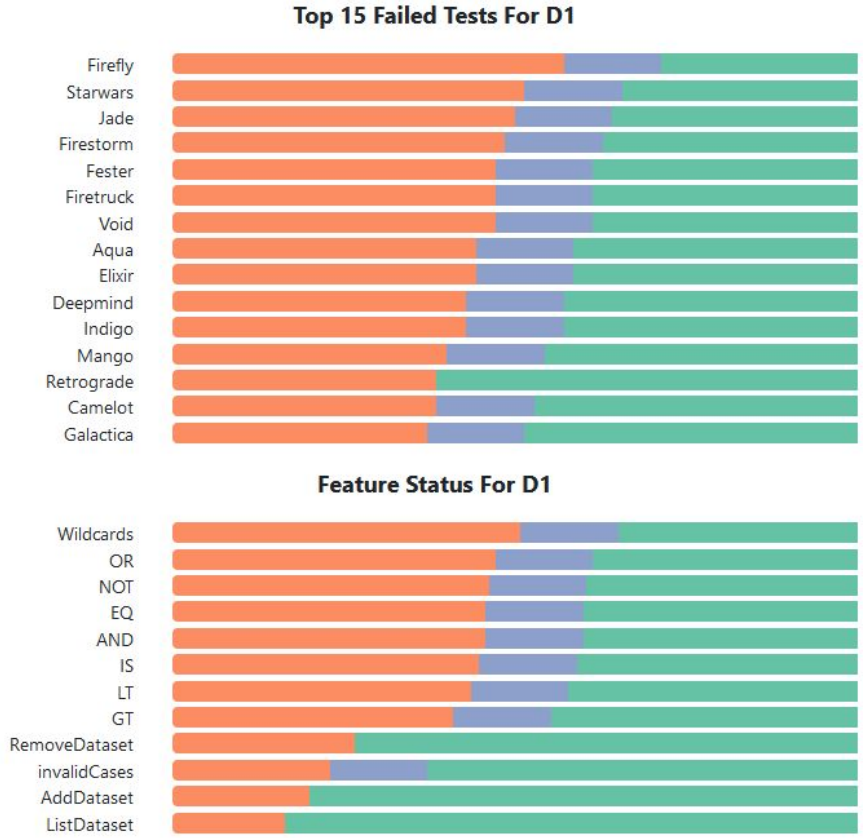




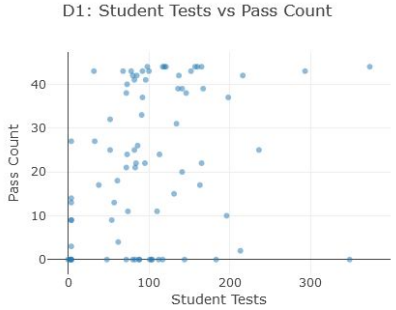
Global Stats

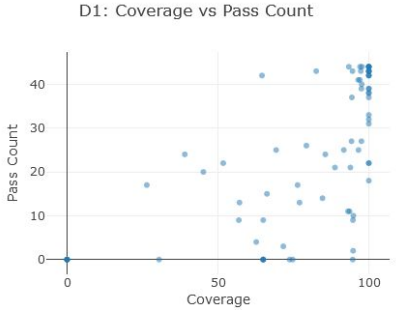


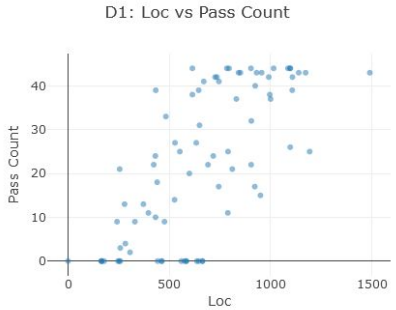
Most failed tests/features

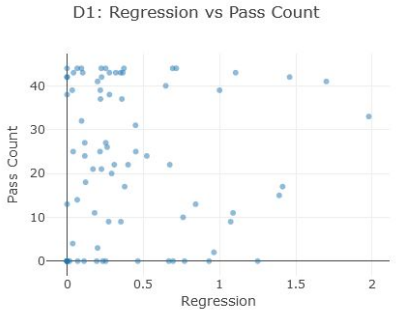


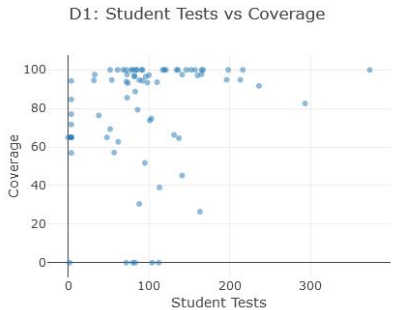
Scatterplots

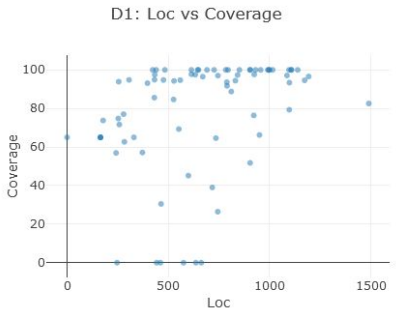




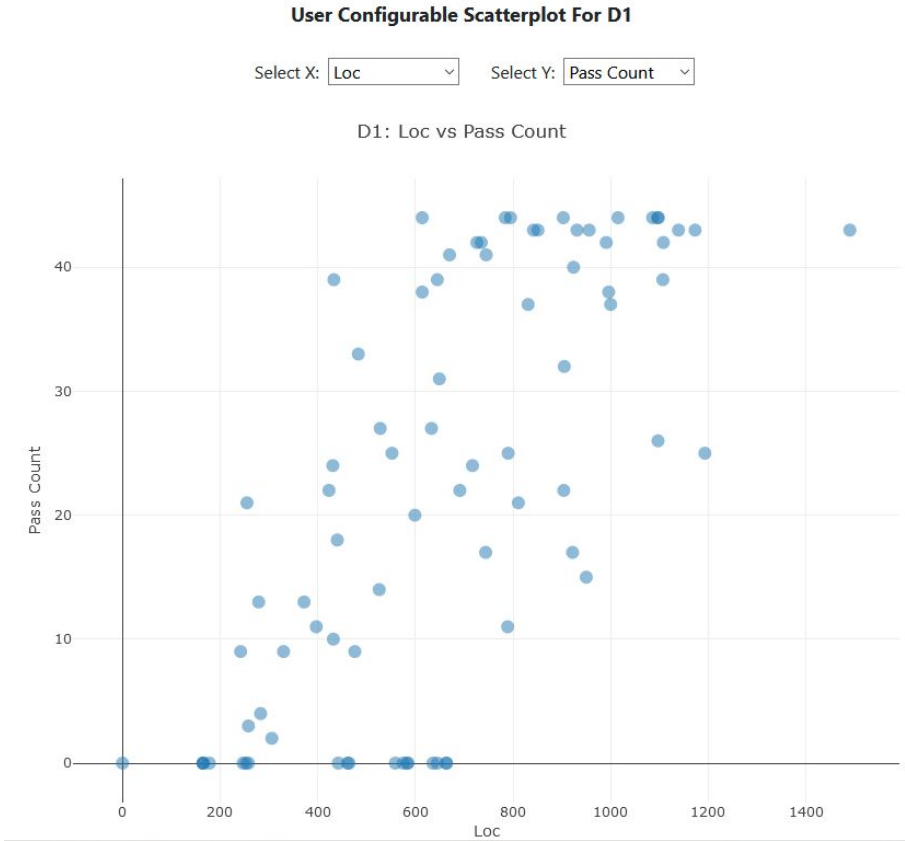




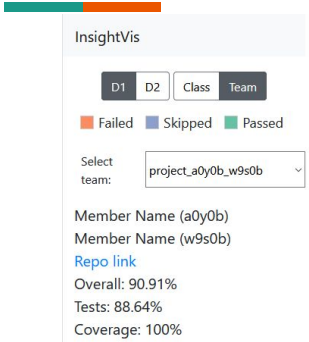


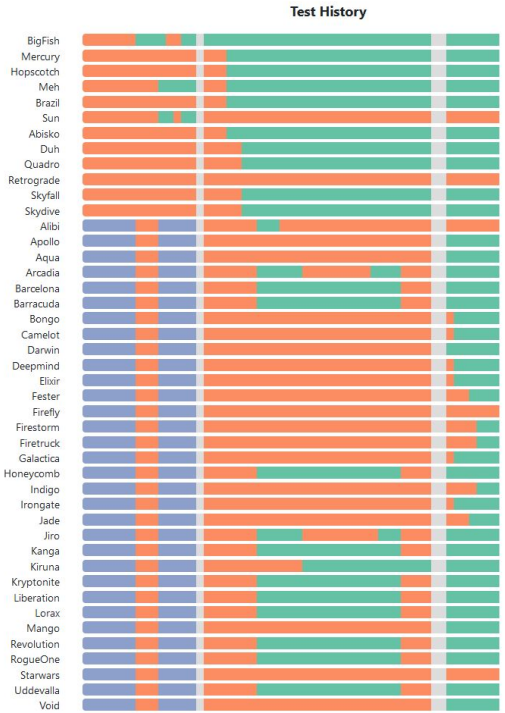


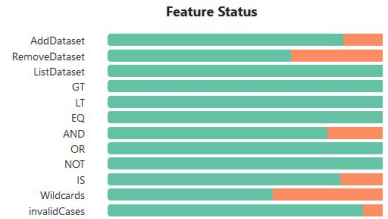
Configurable scatterplot



Team view


InsightVis
D1
D2
Class
Team
Failed
Skipped
Passed
Select team:
project_a0y0b_w9s0b
Member Name (a0y0b)
Member Name (w9s0b)
Repo link
Overall: 90.91%
Tests: 88.64%
Coverage: 100%


Test History
BigFish
Mercury
Hopscotch
Meh
Brazil
Sun
Abisko
Duh
Quadro
Retrograde
Skyfall
Skydive
Alibi
Apollo
Aqua
Arcadia
Barcelona
Barracuda
Bongo
Camelot
Darwin
Deepmind
Elixir
Fester
Firefly
Firestorm
Firetruck
Galactica
Honeycomb
Indigo
Irongate
Jade
Jiro
Kanga
Kiruna
Kryptonite
Liberation
Lorax
Mango
Revolution
RogueOne
Starwars
Uddevalla
Void


Feature Status
AddDataset
RemoveDataset
ListDataset
GT
LT
EQ
AND
OR
NOT
IS
Wildcards
invalidCases