

Intelligent Review System (IRS) Project Proposal

Group Members and Skills

- WinaGodwin Anyanwu (WA)
 - 4th Year Computer Science (& ALIS) Major
 - Programming Experience: Java, C, Android, Python, SQL, C#
- Suma Cherkadi (SC)
 - 2nd Year Computer Science Major
 - Programming Experience: Java, Python/Sci-Kit Learn, Scala, Javascript
- Samuel Toh (ST)
 - 3rd Year Computer Science Major
 - Programming Experience: Java, Python, Django, SQL

IRS Description

The main purpose of ITS is to help students succeed in the class and currently, all of the resources provided in the system are targeted towards the students themselves. The team believes that TAs serve an integral part in a student's success and we believe they need additional insight into how the class is performing. Our goal is to develop a system that will help TAs identify the subject areas that students are struggling with the most in order to provide a more personalized learning experience.

In the last two semesters, the IRS project has expanded to encompass a much wider scope than a single team can handle. This semester, this IRS-ML team aims to continue the work of the previous semesters IRS team while adapting the code to work with the IRSv2 team's pipeline. In addition to this, we seek to write back certain pertinent data into the database in order to improve the speed with which the information can be accessed. Though this is our main goal for this semester, we also aim to use machine learning algorithms to generate predictions about student performance on specific types of problems, such as predicting the difficulty level of a type of question or comparing a specific class's performance against the overall performance of all students.

Project Goals

- Take data from the database in a way compatible with the IRSv2 code and run machine learning algorithms on it
- Run prediction algorithms on data from database and display this data
- Take raw performance data, based on year, and store it in the database.
- Pull yearly data from database and display it with GUI
- Continue working with SQL and Python

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Project Timeline

Week	Task
Week 5	Final Project Proposal Due
Week 6 Phase 1: Resource Setup	Set up SQL- become acquainted with SQL/ Python Either dual boot or install virtual machine Install libraries for ML Research on machine learning
Week 7 Phase 2: Code Analysis	Familiarize ourselves with the repositories from previous semesters (IRSV2 and IRS-ML) Start planning how we can integrate what has been done in IRS-ML into the IRSv2 system Plan types of predictions/analysis to make (Following are examples of possible analyses): <ul style="list-style-type: none"> - Question Difficulty - Ranking TA Groups compared to whole
Week 8-12 Phase 3: Running Algorithms/ Writing to Database	<ul style="list-style-type: none"> - Recreate clustering with new semester data (ST, SC) - Connecting datastreams to algorithms (ST, SC) <ol style="list-style-type: none"> 1. Pull data from database and display it. 2. Run machine learning algorithms on data then display it. 3. Decide what type of data we want to output. 4. Select data streams and algorithms for sought output data. - Writing data to database (WA) <ol style="list-style-type: none"> 1. Pull data from database and display it. 2. Run machine learning algorithms on data then display it. 3. Store altered data inside a table within the database. 4. Pull stored data and then display it.

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	- Have a demo to show by week 11
Week 13-14 Phase 4: Robustness	Use results of machine learning algorithms to create concrete predictions/result <ul style="list-style-type: none">- Create difficulty meter based on results- TA Group Performance Meter Increase types of algorithms run on data
Week 15	Prepare for the final presentation and upload all of the code to GitHub
Week 16	Final presentation

Implementation Tools & Resources

- GitHub: <https://github.gatech.edu/VIP-ITS>
- Project Documentation Notebook.
- React JS
- Machine Learning Library
- Python Library
- SQL Library