

Intelligent Review System (IRS) Project Proposal

Group Members & Skills

- Antonio Goncalves (A)
 - 4th Year Mechanical Engineering Major, CS Minor, Finance Certificate
 - Experience: Java, Python, MatLab
 - Machine Learning (ML)

- Peter Nguyen (P)
 - 3rd Year Computer Engineering Major
 - Programming Experience: C/C++, Python(scikit-learn machine learning algorithms), Matlab
 - Machine Learning (ML)

- WinaGodwin Anyanwu (W)
 - 3rd Year Computer Science Major
 - Programming Experience: Java, C, Android, Python
 - Machine Learning (ML)

- Lucas Couto Phillips (L)
 - 5th year CS major
 - Programming Experience: Python, JavaScript, HTML/CSS, Java, C, PHP, SQL
 - GUI

- Neal Kurande (N)
 - 3rd Year Computer Engineering Major
 - Programming Experience: Java, C/C++, Python, Javascript, Matlab
 - GUI

Project Goals

- Compile a dataset of all the ITS problems completed by students
- Through a machine learning approach, determine the concepts (tags) that the students find most difficult based on the results of the related questions.
- Create a GUI for TAs to analyze this data for class use.

Project 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. The team plans on developing a platform using Machine Learning and an easy to use GUI that will give more visibility into what the students need the most.

The end goal of this project is to display a GUI that has three columns separated by difficulty and has a list of tags in each in what the students are struggling with. Each column has a threshold in order for a topic to be considered into that column.

Project Timeline

Week	Task
Week 5, 6 Phase 1: Resource set-up,	Access & Analyze Database Start Learning React (JS) <ul style="list-style-type: none"> - Project Proposal - Set up Ubuntu VM or Dual Boot ML: New Members watch Udacity videos on Machine Learning Design workflow for final product. Look over the Python and SQL languages and libraries GUI: New members read React tutorial
Week 7, 8, 9, 10 Phase 2: Data collection and GUI front-end design	ML: Determine key fields in database & Data preprocessing. Continue examining SQL and Python libraries. GUI: Look over mockups and decide on a usable front-end for our needs. Choose a method for displaying the topics. Coordinate with ML team for data structure/determine key features for the GUI. (Lucas and Neal can change this to fit their expected workflow)
Week 11, 12, 13 Phase 3: Implementation	Week 11: Midpoint Project Demo ML: Learn what algorithm and classification we should be using to train and implement it into our database. GUI: Implement 3 Column sorting, Cluster

	visualization, and user settings pop-ups.
Week 14 Phase 4: Execution and Presentation	ML: Debug and see whether the results are correct. Gather information and prepare the final presentation. GUI: GUI now pulls from data gathered by ML group instead of small test data . Aim for full integration between frontend and backend
Week 15	ML: Final integration execution GUI: Final changes made to GUI and finish any unfinished features.
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