DALHOUSIE UNIVERSITY

Faculty of Computer Science

CSCI 9301

Research Project 1

Project Proposal

Early Prediction of Student Programming in Block-Based Learning Environments

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Introduction

The study is set out to assess the student's cognitive abilities towards the problems through the data collection of the programming snapshots generated by the students. The data is collected of the student generated solutions and analysis of the solutions is done by examining the programming behaviors in block-based learning environments. The research papers and current resources are exhaustively studied to come up with the novel way of analyzing the student generated solutions and providing the students with the timely formative assessments of their solutions.

Research Goals

The aim of the research is to generate a classification model in evaluating the student performance in block-based learning environments. The goal is to classify the time series data as early as possible and provide the students with the timely support who are facing difficulty in solving a problem. The model was evaluated on following criteria.

1. The classifier should classify the generated solution in the earliest possible time so that the timely intervention can be carried out by the instructors.
2. The classifier should be sensitive to various false positive and false negative classifying errors since not intervening in correct and timely fashion would make the predication irrelevant.
3. The features that are given as input parameters should be intelligible and interpretable to differentiate the instructions provided to the students.

Milestones

Milestone 1: Background Research

The relevant research that is established till date will be exhaustively studied to draw out the useful insights that can be valuable to attain research goals.

Milestone 2: Examining the dataset

The publicly available datasets are examined and most feasible will be chosen in proceeding towards the research.

Milestone 3: Data Preprocessing

The dataset will be tailored and preprocessed to prepare the final dataset that is required for the model training purposes.

Milestone 4: Performing Experiments

The dataset will undergo various experiments and performance metrics will be chosen for evaluating the experiments.

Milestone 5: Result Evaluation

Results will be generated and statistical analysis will be performed on the results that are obtained for the experiments.

Milestone 6: Model Evaluation

The preprocessed dataset will be fed into the model and performance will be evaluated.