

# Project Proposal

Weisheng Wang ww2609 (working alone)

For my project, I'd like to continue my midterm paper's topic about "database-backed web application performance anti-pattern." This topic aims to help developers to address APs that hurt their applications' performance. The topic is relevant to the course not only because it has been well studied by many SE researchers, but also because it shares the same mission with the course: finding and developing tools to help software developers work on various tasks.

For the project, in particular, I want to focus on SQL-based APs and extend the original SQLCheck tool by enhancing its AP detection correctness (i.e. reducing its false-positive rate). In my midterm paper, I experimented with SQLCheck using one dataset schema from Kaggle and found that it has a high false-positive rate. After examining the false-positive cases, I find it solvable through implementing additional rule-based approaches and analyzing raw data's contents (this is proposed in SQLCheck, but the open-sourced SQLCheck tool does not support inputting raw data.)

For the project, I will first examine and report on SQLCheck's performance in database schemas. In the ideal case, I will experiment with 10 popular databases from Kaggle. Next, I will implement my tool SQLCheck+ which will use the schema and database contents to validate and improve the SQLCheck's results and yield the final AP report. For evaluation, I will mostly compare my tool with the original SQLCheck to measure how much the false-positive rate drops.