

# Project First Progress Report

## Overview

For my project, I am working on implementing an extension for Visual Studio Code that assists with introducing parallel Web Workers into JavaScript programs in order to improve performance of intensive tasks.

## Novelty

This project follows the same subject as my midterm paper - parallelism refactoring tools, but unlike the papers I covered, my project targets the JavaScript language, and the VSCode IDE. Not only is VSCode a novel choice for this type of tool, but it is also a very popular IDE for JavaScript / web applications, and it has significant support for writing custom extensions. JavaScript is a novel choice for this type of tool likely because it is not typically a language where parallelism is used for performance, however, there are definitely still use cases.

## Value to User Community

While using web workers in JS is easier than using parallelism in other languages, it will still be beneficial for those who are new to using Web Workers, and even experienced users should find that the tool can save them some substantial time. This extension will be useful to developers when writing web applications that perform some intensive client side tasks (eg. file processing).

## Datasets

I will first write some very small example programs that can be used to test and clearly demonstrate how the extension is used. Next I will look for one or more larger existing applications where my project can hopefully be used to improve performance. This is the approach taken by similar work when evaluating a parallelism refactoring tool.

## Comparison Subjects

In my midterm paper I identified some goals of parallel refactoring tools. I will evaluate the extent to which my tool covers these, and compare it to the features of other tools which I covered in my paper. In particular I will be able to compare the workflow and features of my extension with that of the Paraformance tool which I evaluated in my midterm paper experiment.

## Delivery

The project will be made available in a GitHub repository. The extension will either be made available for download on the VSCode marketplace, or will at least be available for manual install by copying from the GitHub repo into a user's VSCode extensions directory.

## **Development Progress**

As well as researching various aspects of the project, I have begun implementing several parts of the project. So far I have created a VSCode extension which allows the user to select a snippet of code and run a custom command. The selected code is passed to my extension, modified, and then replaced. I am currently working on the modification step which uses the Babel library to parse and modify the AST of the selected code. I have also written a minimal test application used to help develop this project.