

# Midterm Report – Suning Yao

## Background

I am working as a STEP intern at the Map Tiling team at Google Geo. The team is the owner of the infrastructure that builds the map tiles for Google Maps products.

## Project

My task is to add new labels by investigating traffic signs added to the base maps of Google Maps with the other STEP intern as my partner. This task may involve knowledge in the whole pipeline of Google Maps including map tiling, map painting and map rendering. The tech stacks I am working on are C++, MapReduce, and Protocol Buffers.

Adding new labels to the base maps includes three separate stages in the pipeline: map tiling (getting raw data and making it tiles with data related to features like restaurants), data pipelining (sending tiling data into the next painting stage), map painting (adding styles to the tiles with labels and icons).

My job focuses on map painting and data pipelining. It is mostly selecting fields and adding styles to segments of the new labels on the map with label filters at different zoom levels.

## Challenges

### 1. Previewing and testing

Since the infrastructure of Google Maps involves multiple complex components and much computing power to build, the previewing and testing requires me to start multiple preview servers for map tiling and map painting.

The development doc is complete, so it counts every case. Without the whole package, the data or style will not match with each other. It took us a few days to work that out with debug tools and explorers, and reading through the doc carefully.

### 2. Standardized development process

For my previous school projects and open-source side projects, I always use my local laptop and Git to test and track revisions.

Google uses unique version control tools and has a huge monorepo for all the codebases. I went through the developer workflow guide to get hands-on experience on that. Also, the ssh setup takes me some time to work out, because I have never set that up during my development experience with all the workflow on my personal laptop.

### 3. Working with PM, and designers

During my past projects, I am always on a one-man team to make decisions. However, adding new features to Google Map needs the help of Product Manager and UX designers to make sure everything works in a perfect state. They will help us identify the needs and design of the map features, specifically where and how traffic signs should be located and shown.

We just started to talk with the PM and designers to initiate the overall design of that.

### Other experience during the internship

Besides gaining development skills, I also get to know the culture and vision of Google by company events, onboarding tutorials, and communicating with other colleagues.

I very much enjoy the hybrid work mode, free food, free transportation, and fun events during the internship.