Outsmarting traffic with R & Shiny

Waze is the world’s largest community-based traffic and navigation app. Waze enables you to join other drivers in your area who share real-time traffic and road info, saving everyone time and gas money on their daily commute.

In order to outsmart traffic together with our users, we collect, process and analyze large amounts of data. Waze relies heavily on insights from this data both for decision making and for constantly improving our core product - faster routes, better maps, happier users.

This understanding has led us to search for a fast, interactive tool / framework where we can process and visualize complex data, while enabling a complex backend (which in most cases includes some statistical analysis or usage of machine learning models) and still providing the flexibility of a “do it yourself programming approach”.

Solution

Rstudio Shiny Server provides all of these capabilities and more.

We’ve been avid R users for a long time now, so in a matter of days from starting to work with Rstudio Shiny Server we’ve deployed our first dashboard with much hype and success. As desired, it included both an interactive tool for analyzing geospatial data over a map, and some statistical analysis in the form of anomaly detection for irregular traffic.

After this first success and during the course of the next year we’ve deployed dozens of shiny applications, which are now used in a wide variety of groups within the company. Shiny apps are a favorite of both the data scientist analyzing and visualizing data, and for our users that are actually having a great time just exploring data over a map with a fast and beautiful interactive tool.

Some examples of Shiny Apps that are being explored daily include:

- Exploring and analyzing dangerous places using clustering of accident reports

Challenge

Being a social navigation app includes handling lots of data which almost always include a geospatial aspect. Geospatial data is noisy by nature, contains complex data structures (polygons etc.) and makes the most sense when explored / visualized over a map.

Providing the right tools and dashboards for product managers, decision makers, and operators has been a tough task due to the nature of this work.
• Sentiment analysis from twitter / store comments in real time

• Interactive tools for trend analysis in navigation / map edits

Also being a Google owned company, the Google-Auth authentication for Shiny dashboards provided by the pro version was a definite deal maker for us.

The Payoff
RStudio, Shiny and Shiny Server Pro have paid off in a number of ways:

• Fast time to market with dashboard and visualization development.
• Integrating dashboard development with the already used and beloved R.
• Geospatial analysis and visualization with almost no effort.
• Beautiful interactive exploration tools that also have the power to incorporate complex statistics and machine learning models.
• Flexibility in development and use in comparison to other dashboard tools.
• When we program it ourselves we can customize every single pixel!

The results: happy data scientists and happy decision makers.

About RStudio
RStudio provides open source and enterprise-ready professional software for the R community. We are inspired by the people who use our products to understand and improve the world through data analysis.

“Shiny Server Pro dashboard and visualization development allowed the fastest time to market.”

- Daniel Marcous
- Google, Waze, Data Wizard

Why RStudio?
RStudio being the developer of the famous RStudio IDE, and being a major contributor to the R open source community, sponsoring some of the greatest R packages ever made, is a company we highly appreciate.

Going for RStudio Shiny Server Pro includes awesome support from the best engineers in the R community.