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Comp 531
November 28, 2016

Vue.js's introduction and comparison with React.js

This paper is mainly focused on introducing a fairly popular and decent javascript framework called Vue.js and compare it with another popular one learned in class — React.js. Although Angular and React are still the most popular choices among US companies, I believe Vue.js has its own merits and may catch it up with these two major competitors someday.

Vue.js, pronounced as "View", is a fairly new and popular progressive javascript framework that shares the same philosophy with React.js. The framework is developed by Evan You (尤雨溪 in Chinese), a Chinese fronted developer who works in Google Creatives Lab. He graduated from art history major in college and has phenomenal artistic touch in user design and interactions. During his work in Google, he got tired of how heavy-lifting Angular.js is and tried to explored his options to find some light-weight framework he could use, later leading him developed his own experimental project that finally become Vue.js. Currently he actually devoted his full-time effort in supporting and developing Vue's core libraries and promoting the project in the tech community.

Like React, Vue.js is focused on the view layer of traditional MVC model, but it could also be integrated with other existing libraries and tools to develop complex Single-Page applications.

Vue.js utilize virtual DOM manipulation to let user do the declarative rendering with simple and intuitive template syntax.

```HTML
<div id="app-2">
  <span v-bind:title="message">
    Hover your mouse over me for a few seconds to see my dynamically bound title
  </span>
</div>
```

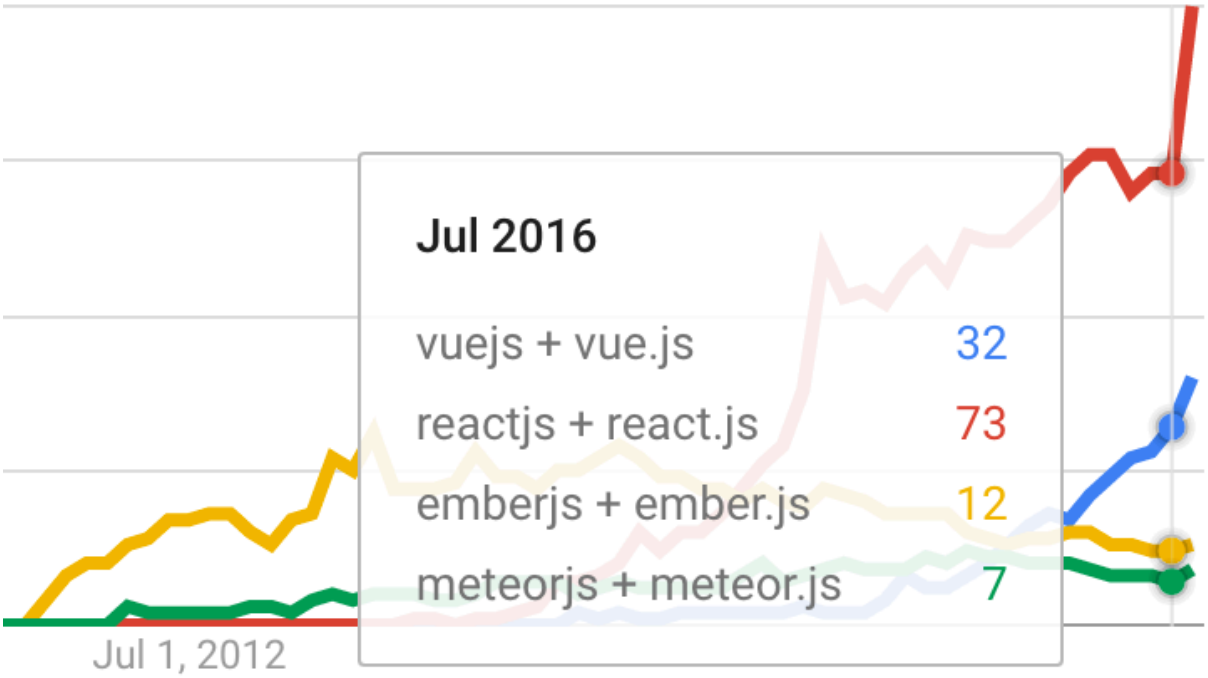
```JS
var app2 = new Vue({
  el: '#app-2',
  data: {
    message: 'You loaded this page on ' + new Date()
  }
})
```

By using directive attributes like “v-bind”, the data and DOM element is linked painlessly. (pictures from reference 1)

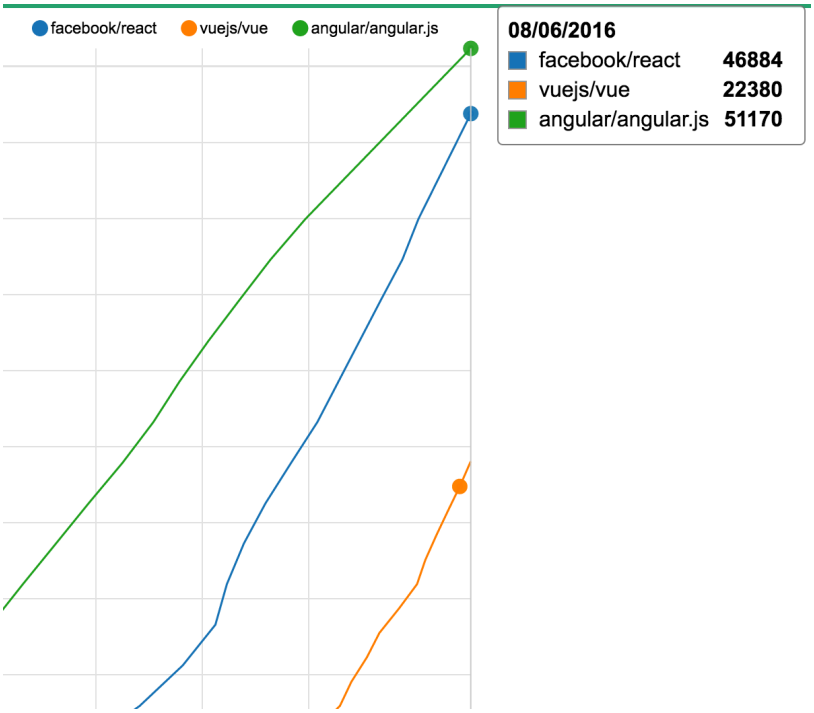
Vue.js also utilized component systems in design to enable user to build large-scale website and applications in a really nice and decent abstraction, which means that user could declare small and re-usable component (or class object) and combine them together to form larger components, which sounds exactly like playing with Lego toys. It’s always a good practice to divide and conquer when building large and complication applications.

We all know web technology moves extremely fast, especially on the front-end side. Although Angular and React seems to be the two most dominant competitors in the area of javascript framework, Vue.js proves to be quite popular and should not be underestimated.

Google Trends



Github Trends



(pictures form reference 2)

By looking at the graphs, we could see that Vue.js is trending pretty well and catching up in a consistent growth rate. And regarding the usage in the industry, US companies (especially in Silicon Valley) tend to stick to products made and promoted by Google or Facebook, so the usage of Vue.js seems to be limited. But in China, Japan or even in UK, Vue.js is quite popular and being used by some really big tech companies, like Alibaba, Tencent, Xiaomi, Nintendo and Sainsbury. Additionally, some open source projects promote the use of Vue.js, like Laravel, Gitlab and Pagekit.

Compared with React.js, Vue.js certainly has some advantages and disadvantages, which would be stated as following:

1. Performance benchmark.

Both framework use virtual DOM manipulation, but Vue.js is a much light-weight framework and add less overhead than React. The run-time performance of rendering DOM elements certainly favors more on Vue's side. Additionally for update performance, React would re-render the entire tree of web element (including the root and all its children) once the state of the element has changed. But Vue.js tracks the dependencies and know which part of web elements should be re-rendered, saving the time to update the whole element. However, React has its own reason to add those overhead in the core library, since it does more checks of the state change it will produce more warning and debugging message for users during development.

2. HTML & CSS

In React, we use JSX, a XML-like syntax that works with Javascript to render the whole UI. In Vue.js, user could choose either JSX or just simple template syntax to render the view. There are some advantages on using template, such as more intuitive and direct way of declaring HTML, advanced Javascript are not required(ES6 or ES7) and really newbie friendly for developers who don't have much experience in writing functional programming or advanced javascript code. It let you write simple javascript just like back in the days of jQuery. But using JSX also has its own advantage, like embracing the full power of advanced javascript and way more existing tools/library support than Vue.js templates.

Besides the steep learning curve for React, building a React application from scratch is not easy and light-weight as Vue.js. Just like jquery, user could just put the CDN resource in the script tag to start using Vue.js, but they could also choose Webpack and Broswerify as build system to build the whole application,

3. Native Rendering

ReactNative is really powerful and user could write native-render apps in various platforms (iOS and Android) by reusing the same React components model, which not only saves time for development but also make the applications supporting multiple platforms. Currently Vue.js is trying to work with Alibaba to develop a similar cross-platform UI framework, but they are still not quite there yet. And as a fairly new competitor, Vue.js still has a lot to do to compete with React, since it doesn’t have such widespread popularity in Silicon Valley and it also lacks a well-grown and mature ecosystem like React, which gathering support from large community of users and also Facebook experts and developers.

To sum it all, Vue.js is a quite decent javascript framework that might share the same philosophy with React but also outperform React in some certain aspects. To describe its philosophical choices in design and architecture, Jacob Schatz from GitLab said “Vue.js comes with the perfect balance of what it will do for you and what you need to do yourself. If Backbone was anarchy (no one in charge) and Angular is a dictatorship (the Angular team is in charge), I'd say Vue.js is like socialism: you are definitely in charge, but Vue.js is always within reach, a sturdy, but flexible safety net ready to help you keep your

programming efficient and your DOM-inflicted suffering to a minimum.” (reference 3)

As a developer in US, picking up Angular or React might open more doors for you in industry, but learning Vue.js could benefit a lot if you aim at Asian tech companies or just interested in building your own side project. For startup and small business owners, Vue.js would be much more beneficial since it’s a light-weight framework that excel in boosting up performance both in development time and run time of applications.

References:

1. Vue.js guide: https://vuejs.org/v2/guide/#Declarative-Rendering
2. Quora: https://www.quora.com/How-popular-is-VueJS-in-the-industry
3. GitLab blog: https://about.gitlab.com/2016/10/20/why-we-chose-vue/