Designing Data Visuals That Sparkle:
Building Insight You Can See

Only speakers can be listed here. Adding authors who are not presenting or exceeds the max limit may disqualify your submission for review.

FACILITATOR NAME
Organization
Contact info
(Minimum 2, Maximum 3 Facilitators)

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Contact info
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Organization
Contact info
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ABSTRACT

Tells us what your proposal is about. *Must match what is in your submission

Do you deal with data but struggle to create data visuals that tell a story? Data visuals create impact and insight, particularly with big data. D3.js is a powerful open source SVG drawing library that empowers you to design complex visuals. Learn core concepts of SVG, binding data, adding animation sparkle, and optimization tips. Walk away with your own interactive, compelling data visual.

AUDIENCE

Tell reviewers who will benefit most from this submission

The target audience for this workshop is the data science community (or interest in data science) with a beginner-intermediate understanding of SVG drawing. We provide 'advance solutions' to both understand capabilities and allow advanced students to gain techniques. However, these are not taught indepth and are not the focus of the workshop.

INTRODUCTION

Data visualizations are essential to data science community and the process of data exploration. Good data visuals can easily depict trends and outliers within data, aid in constructing accurate data models and most importantly tell a story about the data.
However, many data scientists rely on simple charting libraries that do not support all their needs. Some common charting libraries hide the underlining scenegraph and do not provide the flexibility to add additional features such as a mean line or interactivity. In addition, it is difficult to debug.

D3.js is a widely used, low level, open source drawing library that allows developers to explicitly define implementations on SVG, which is a web standard, XML based vector image format. It is a powerful tool in creating complex visuals like graphs. D3.js is the backbone of many SVG charting libraries. This D3.js has a nontrivial learning curve. This interactive and fun presentation will go over how to work (and debug) SVG, joining DOM elements to data, making visuals sparkle with animations/transitions, tips on how we handle big datasets and how to design more insightful visuals. Participants can incorporate these concepts into future projects to create impactful custom data visuals.

The platform chosen for the workshop is intended to lower the barrier of development for non-JavaScript programmers by hosting on CodePen (requiring no development setup, signin, or repository download). All the data is formatted and parsed for the participants along with basic code structuring. Solutions to exercises are provided in a public Github repository and linked directly from the CodePen application (links in the Bio section). We will be working with some interesting datasets that have many facets to filter and allow further exploration

beyond the workshop.

The objectives and corresponding exercises are in the next section. The workshop structure is formatted such that an example and discussion is given before participants execute a guided exercise on that objective. There is a cumulative 'capstone' project which applies all concepts learned into building a custom visual.

This workshop has been formatted for a large audience. It was successfully performed at the SeattleJS meetup on Feb 21, 2019 for over 200 registered participants with positive feedback (links to video in Bio section). We have also taught this internally within Microsoft and in the process of scheduling the workshop at the local high school for 30-40 students.

BREAKDOWN OF TIME
(continued on next page)

Good submissions allow reviewers to clearly visualize how this session will go

MOTIVATION

This section is not required but can help reviewers understand your submission.

We attended GHC 2018 and did not find any talks or workshops directly applicable to frontend engineering and designing custom interfaces. Adding the workshop would diversify content at GHC, expose younger engineers to frontend engineering, and enable data scientists to learn tips on creating more effective data visuals from our experience of working with it daily.

OUTCOMES/CONCLUSION

Participants should walk away with a working knowledge on creating custom data visualizations and resources for further exploration. Participants learn to create scales, append data to DOM elements and update DOM elements with new data. These concepts are reinforced by mini exercises and a larger, practical application of building a visual with multiple filtering criteria. We will discuss optimization techniques and resources to learn more.

PARTICIPATION STATEMENT
All Facilitators will attend GHC if selected.

REFERENCES/BIBLIOGRAPHY

This section is required and should not be solely based on personal experience.

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We envision a future where the people who imagine and build technology mirror the people and societies for whom they build it.

BREAKDOWN OF TIME

TIME (MINUTES)	OBJECTIVE	ASSIGNMENT (IF APPLICABLE)
5	o Go over workshop format o Introduction to data visuals o Defining SVG and D3.js, use cases	n/a
3	o Learn how to append SVG primitives o Understand SVG grid	Modify existing code to change attributes: x,y values, height, width, fill
3	o Discussion on appending static data to SVG primitive DOM elements	n/a
3	o appending static data to SVG primitive DOM elements (from above discussion)	Follow example and create circles based on simple data array
5	o Discussion on appending dynamic data to SVG primitive DOM elements	n/a
5	o Appending dynamic data to SVG primitives	Follow example and create circles based on simple data array and update them to new x,y position
5	o Discussion on scales: domain and range, color scales, axes	n/a
5	o Apply x and y scale	Create x,y scale and uses D3 axes helper function to append it to the SVG
3	o Go over requirements for Bar Chart Layout and code structure	n/a
20	o Practical application	Apply knowledge of SVG Primitives, scales, and data joins to create a dynamic bar chart
3	o Exposure to advance Techniques: Optimization and design tips based on different layouts	n/a
Total: 60 minutes		

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BIO

Facilitator 1 Name, Title, Company
Facilitator 1 Bio

Facilitator 2 Name, Title, Company
Facilitator 2 Bio

Facilitator 3 Name, Title, Company
Facilitator 3 Bio

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