CyMail

Carson Sievert <sievert@iastate.edu>

Fwd: InfoVis 2014 (papers) notification - #158

3 messages

Toby Hocking <tdhock5@gmail.com> Sat, Jun 7, 2014 at 6:33 AM
To: Carson Sievert <sievert@iastate.edu>, Susan VanderPlas <srvanderplas@gmail.com>

Out animint paper got rejected! Carson, we can definitely add you as a coauthor if you want to work on the resubmission after GSOC.

There are many helpful comments and especially pointers to references that we should read.

---------- Forwarded message ----------
From: <infovis_papers@ieeevis.org>
Date: Fri, Jun 6, 2014 at 4:06 PM
Subject: InfoVis 2014 (papers) notification - #158
To: tdhock5@gmail.com
Cc: infovis_papers@ieeevis.org

Dear Toby Hocking -

We regret to inform you that we are unable to accept your InfoVis 2014 (papers) submission:

158 - Animint: a Grammar for Interactive Animations

The reviews are included below. This year InfoVis had 196 submissions and we conditionally accepted 45, for an acceptance rate of 23%.

There were many factors considered in evaluating the reviews. Although numerical scores are important, we also read reviewers' comments and discussion closely to understand their reasons for the scores, balancing different points of view in arriving at our final decision.

Many of the submissions that were not accepted present interesting work and ideas. We hope you will find the reviewers' comments informative, especially if you revise your paper for submission to next year's conference or elsewhere.

We particularly encourage this where the ideas contained in submissions were positively received by reviewers but the revisions required were deemed to be beyond the scope of the conference review cycle. If you address the issues raised and subsequently submit to TVCG please make reference to the InfoVis 2014 submission and include a description of any changes against the InfoVis reviewers' comments.

Please also consider submitting work that was received positively to the VisWeek 2014 Posters program, due on June 27. This will enable you to present your work to the VIS audience and get further feedback on your ideas. For more, see http://ieeevis.org/year/2014/info/call-participation/posters

We thank you for submitting your paper to InfoVis 2014 (papers). We wish you the best in your endeavors and still hope to see you in Paris in November. Please check online for updates on this year's program - http://www.ieeevis.org/

Helwig Hauser, Jeffrey Heer, and Melanie Tory
InfoVis 2014 Papers Chairs

---------- Submission 158, Review 3 ----------

Title: Animint: a Grammar for Interactive Animations

Reviewer: primary

Paper type

System

Expertise

3 (Expert)

Overall Rating

2 (Reject
 The paper is not ready for publication in InfoVis / TVCG.
The work may have some value but the paper requires major revisions or additional work that are beyond the scope of the conference review cycle to meet the quality standard. Without this I am not going to be able to return a score of '4 - Accept'.)

Supplemental Materials

Not applicable (no supplemental materials were submitted with the paper)

Justification

This is cleverly implemented and an interesting system; however, the authors have not been highly reflective about its strengths and weaknesses. My weak review is based on the fact that the system is not evaluated--not in terms of a user study, but in terms of a reflection on the system. As a visualization designer, and as a system designer, I would like more guidance to know whether these decisions were good ones, and what their tradeoffs were.

The Review

AniMint is an expansion to the Grammar of Graphics to allow for various forms of selection. The paper discusses how these new forms of selection and highlighting allow brushed-and-linked views. Animint can export its results to D3.

The idea of adding interactivity to visualization systems that, typically, best describe the world in non-interactive terms is an excellent one; I am glad to see researchers playing with these ideas. In this paper, the authors have filtered this to precisely two new concepts, clickSelect and showSelected. They write, " a large class of interactive plots can be specified using just [these] two interactive keywords;" they also add a new object, the "TallRect."

This paper is highly technical, but not very reflective. The paper features technology choices, and feature comparisons with other toolkits. I would much rather see more discussion about how the authors made the decisions about what they did.

Is this a sufficient set of new things? What sorts of things does it make easy? What does it make hard? Did the researchers find that they needed to redesign their visualizations to make this work, or were they able to express the things they were interested in? What succeeded when they created it, and what falls through?

For example, it is popular to select regions with brushing tools--see Heer's "Generalized Selection" and "Scented Widgets" papers for lots of

good examples of selection modalities. Which of these does the system support? Do the authors regret losing the ability to multi-select, or is the grammar theoretically expandable to adding those too? Are these unnecessary, or uninteresting? Are they HARD to express, or simply things that the authors didn't get around to doing?

By the way: I was just reminded of Heer's Declarative Interactivity for ProtoVis paper,which touches on some similar material : http://vis.stanford.edu/files/2010-Protovis-InfoVis.pdf

Summary Rating

2 (Reject
 The paper is not ready for publication in InfoVis / TVCG.
The work may have some value but the paper requires major revisions or additional work that are beyond the scope of the conference review cycle to meet the quality standard. Without this I am not going to be able to return a score of '4 - Accept'.)

The Summary Review

This paper has generated tremendous discussion amongst the reviewers. We all find it interesting and useful, and look forward to seeing the authors articulate their ideas further. Reviews were 2,2,3,3: no single reviewer stood up to defend it, although two find it acceptable.

The paper focuses heavily on the techniques, comparing itself to other toolkits and APIs. Unfortunately, this neglects the research component, leaving the committee to argue amongst themselves about the research contribution.

Each of the reviewers has noted that the paper simply doesn't seem aware of other projects in selection, direct manipulation, animation, or brushing and linking; as a result, there's no sense of where this paper is contributing. Similarly, describing "lines of code" is not necessarily a good measure for expressivity--PERL is notorious for having few lines of code that are highly expressive but entirely unreadable.

On the positive side, several of the reviewers--R4, especially--feel that adding interaction is so hard today that this work is a major contribution on its own. R1, similarly, finds the technique in discussion "simple and natural".

In the end, then, the authors have presented a small and elegant idea. Is this an intellectual dead end, or a harbinger of opening an entire area of research? If the latter, this work is excellent; if the former, it's a useful open source toolkit but perhaps not a publication. The distinction might be worth drawing in the paper. From that perspective, aspects like the GGPLOT-to-D3 cross-complier are possibly even a distraction from this core contribution.

Clarifying and contextualizing the contribution would help promote this potentially-exciting work tremendously. Without this, however, this paper is a (2), Reject.

Second round comments (public)

Second round supplementary materials check

Second round supplementary materials comments

---------- Submission 158, Review 1 ----------

Title: Animint: a Grammar for Interactive Animations

Reviewer: secondary

Paper type

System

Expertise

3 (Expert)

Overall Rating

3 (Possible Accept
 The paper is not acceptable in its current state, but might be made acceptable with significant revisions within the conference review cycle.
If the specified revisions are addressed fully and effectively I may be able to return a score of '4 - Accept'.)

Supplemental Materials

Acceptable

Justification

This is a complicated paper with more than one focus. In the end I'm not sure any one part is strong enough to merit publication.

The Review

This is an interesting paper that can be read at several levels. First, it investigates an area of great current interest: declarative specification of interactivity. Second, it describes a fairly complex system that combines R and web technologies to implement interactive visualizations. Overall, I believe that the authors' system is useful and practical.

Unfortunately, I'm not completely convinced that the advances in the paper are sufficient for publication. Interactivity is a broad and deep subject, but the particular type of interactivity studied by the authors (brushing and linking) is one of the simplest cases. Simple frameworks for describing brushing and linking have existed for a long time (see Improvise, from Weaver, Snap-Together Visualizations from North et al., and many others.) Could the ideas in this paper generalize to more complicated or sophisticated types of interactivity? If not, the paper may represent a theoretical dead end.

I'm somewhat more interested in this paper from a systems perspective. Finding ways for R users to create interactive visualizations is interesting, and while ggvis looks to provide solutions, the area is still young. The fact that the authors have seen good results from domain experts in using the system is a very good sign. To be published, however, I'd prefer to paper to have more detail about how the system was used in practice. For a future conference, expanding the case study section would probably improve the paper greatly.

---------- Submission 158, Review 2 ----------

Title: Animint: a Grammar for Interactive Animations

Reviewer: external

Paper type

System

Expertise

2 (Knowledgeable)

Overall Rating

2 (Reject
 The paper is not ready for publication in InfoVis / TVCG.
The work may have some value but the paper requires major revisions or additional work that are beyond the scope of the conference review cycle to meet the quality standard. Without this I am not going to be able to return a score of '4 - Accept'.)

Supplemental Materials

Acceptable

Justification

This paper describes a declarative specification of interactivity and applies it to a system making the connection between R and the web. However, I am not convinced that the contribution is strong enough and that the Infovis community would benefit from it. Indeed, there is no contribution to animations, nor interaction patterns (isn't it simply an observer pattern?).
The contribution should be deeply compared to Vega, as it is a close DSL. Although the paper briefly discusses differences, I have difficulties understanding in which aspects they differ, and which one I should use as a user. The paper also restricts the comparisons to free/open-source implementations, and although it is commendable, a mix of open-source and commercial products exist, thus the latest should not be withdrawn.
The evaluation of the system is interesting but poor and lacks evidences. To be published, this section should be detailed and a more rigorous evaluation conducted.
Also, the paper is not well written, contains typos and mistakes, and is sometimes difficult to follow.

The Review

The proposed system -which is open source- is practical, and certainly useful to a range of users. Not being a R expert, I do not clearly see the importance for this pool of users, but I assume it is. The authors focus on animation but do not detail the visual changes. Are animations staged? delayed? timed? Are they linear? slow-in/slow-out? Is it just a frame-change, without animated transition? I think that a deeper description and definition of what is meant by interactive animations is required.

In the introduction, the three sentences:
-"the reader or user may interact with the plot to view data about another country or time period"
-"The main goal of Animint is to provide an expressive language for designers, while allowing users the freedom to interact with the plot to selectively view data subsets of interest"
-"The user writes no code, but can view and interact with an Animint

visualization by clicking Scalable Vector Graphics (SVG) elements in a web browser"
are interesting, but do not convey a new message. They are not new and should be a base for comparison with existing systems.

*"since one of the variables in this visualization is the year of measurement, it is natural to animate the visualization to see how the data changes over time".
I do not agree with that. It is a reasonable option, but not the only one. For example, assuming that the data is spatio-temporal, one could explore the 2D space and observe the corresponding time, instead of exploring time to observe the 2D space. Moreover, it seems that the TIME variable must be defined, to animate over TIME, only. This is a strong limitation as one may need to animate according to another dimension.
Another limitation is the unique variable selection. Brushing is now a standard, and selecting several values at a time frequent. The authors later on compare Animint to Cleveland's system-which already implemented brushing-, but comparing to a system which is 20 years old when many new systems were designed since does not really make sense. in section 5.2, the authors explain that when TIME is not a variable, then no animation is needed. Animation is not according to time only.

*One of the main issue is the comparison with existing systems.
First, Animint is not compared to commercial product, which is commendable in a philosophical point of view, but not in a scientific one. The authors state "Unlike Animint, there is no free/open-source software implementation of Tableau, so we will not discuss it further."
First, it is not true, as students can get a free version of Tableau.
Then, Tableau is a reference in visualization, and offers many functionalities that should be discussed.
"In conclusion, other systems that implement the grammar of graphics are limited to non-interactive plots, and other systems that implement interactive animations do not exploit the powerful grammar of graphics. Animint is the first system that implements both." I cannot agree with that, as Tableau, for example, implements both too. (At this point, if feel like I have to precise that I am not employed at Tableau, and I am only a casual user of it).
Then, Animint is compared to "incomparable" systems. The authors should clearly focus more on a comparison with Vega and detail the pros and cons of each implementation. If the number of lines of code is an indicator, it is not the only one. How easy is the language to use for example, is a crucial one too. Moreover, in Figure 2, the difference in terms of number of lines of code is quite similar (9 lines vs 8 lines), thus I am not sure of the argumentation. Also, in Table 1 the complexity of the implementation is related to #LOC only.

User feedback:
*"Our users": Who are they? Where do they come from? We just know that they use R, but are they expert?
*"that would be too complex to implement in other systems": that is a strong claim, and I am not convinced.
*Did the user build the visualization, or did the authors build them with the user? ("We and our users").
*"Animint is easy to learn": how did the authors collect data? think aloud? interviews? questionnaires?
*One of the finding of the user feedback is that users found the visualization useful. Although it is interesting, it is also both trivial and not really the scope of this paper; because the aim of Animint is not to demonstrate that visualization is useful, but to provide a way of writing code in a simpler declarative language. Which is not discussed in this section.

Other remarks:
*I am not sure what the authors mean by "interactive animation" vs "animated visualization". Does it mean that the animation is triggered by interaction, or the animation controled by interaction?
*The authors make several claims, such as "gain expressive power"(intro), "rCharts is more expressive but less flexible than Animint"(2.1), "to specify more complex visualizations"(2.1), "This usually results in a richer Animint data visualization using fewer lines of code."(2.3). I need evidences.
*Figures are difficult to read and should be redesigned.
*Shneiderman indroduced the term "direct manipulation" in 1982, not Cleveland.
*"Showing and hiding data subsets was accomplished by clicking on a slider for year and a menu for country, not by clicking on the plot elements"(4.2). I think this part is worth discussing deeper, as it is related to direct manipulation, or even the spatial indirectness of instrumental interaction.
*I wonder about the scalability of the system, since the examined datasets were small.
*I wonder why the authors precise that time and size increase with dataset size. The contrary would have been paranormal.
*5.2: I wonder how the user can select a point when points overlap, because there is no filtering, no pan & zoom, no focus+context.

---------- Submission 158, Review 4 ----------

Title: Animint: a Grammar for Interactive Animations

Reviewer: external

Paper type

System

Expertise

3 (Expert)

Overall Rating

3 (Possible Accept
 The paper is not acceptable in its current state, but might be made acceptable with significant revisions within the conference review cycle.
If the specified revisions are addressed fully and effectively I may be able to return a score of '4 - Accept'.)

Supplemental Materials

Not applicable (no supplemental materials were submitted with the paper)

Justification

That Animint is able to specify the interaction that it does using only two keywords is a huge result. The presentation of the system is excellent and the comparison with equivalent R systems is as well. The authors should clean up the introduction and related work and I would like to see a more complete discussion of the space of interactions supported by Animint, but these are all feasible within the review cycle.

The Review

Animint is an extension for the ggplot2 R library (and the Grammar of Graphics itself) for enabling brushing+linking between and animation within ggplot2 charts. Animint code is written in R and then compiled to D3/javascript code which can be easily published online. The authors (as well as other developers) have built a number of different multi-plot visualizations using Animint which the authors include links to within the paper. The authors also provide a comparison with two other R plotting libraries that support either animation or interaction by building the same visualization in all three.

I consider this work to be excellent. That the authors are able to provide the extent of interactions that they do with only two keywords is a huge result that I believe should be presented to the community. While I have a number of comments about the paper, the research is solid. Furthermore, the design, implementation, comparison study, example applications, user feedback, and limitations sections are detailed, informative, and well-written.

The first comment about the paper is that I wish the authors had further discussed the interaction space supported by the "clickSelects" and "showSelected" aesthetics. What are the cases where these are sufficient? What are the cases where supplying only these two aesthetics limits the designer? The authors hint that they have thought about these two questions in the 4th paragraph of section 7 ("The current Animint implementation...") and in section 2.1 ("there are some specialized D3 plots which can not be created using Animint"). Considering the authors have two more pages to work with, I feel that this is an important piece missing from the paper.

My second comment is in regards to the authors' related work section. The authors have done an excellent job identifying the current crop of visualization specification toolkits. I also feel that their organization within this section was well done. However, there are a number of issues throughout this section. First, the authors rely quite heavily on the "lines of code" comparison. This is counter-productive. As the authors even explain, D3 may require more lines of code, but it can also produce plots that Animint cannot. Second, the authors make a number of apples-to-oranges comparisons between the related systems and Animint, often referencing "high-level DSL" or "the grammar of graphics". For example, "Unlike Animint, DC does not use the grammar of graphics, so DC designers must use more lines of code," in section 2.1. This statement comes off as incredibly reductionist, especially since a paragraph earlier the authors describe how rCharts can make charts in a *single* line of code without using the grammar of graphics. In section 2.2, that Animint uses a declarative DSL is irrelevant. What is relevant is that animation only supports fast-forward and rewinding and no other interactions and that googleVis only supports single-plot visualizations. In section 2.3, once again, lines of code is irrelevant. Vega was never intended to be written by hand, just as the Animint json code was never intended to be written by hand. With regard to ggvis, the sentence "This usually results in a richer Animint data visualization using fewer lines of code," is unnecessary. The issue is not the lines of code, it is the lack of direct manipulation in the resulting ggvis, as the authors explain over the next two sentences. (I also encourage the authors to cite some of the literature on direct manipulation here. Especially Hutchins et al.'s 1985 discussion on articulatory distance ("Direct Manipulation Interfaces" and Beaudouin-Lafon's 2000 discussion of spatial offset ("Instrumental Interaction").) Finally, section 2.4 has a number of issues. First, Cleveland's system not having a high-level DSL is once

again irrelevant. Second, closed source vs. open source is also irrelevant here. Third, saying that VizQL is also a declarative DSL for vis, making it one of the most closely-related systems to Animint, and then claiming you will not discuss it further since it has no open-source implementation is extremely problematic. Tableau has published a whitepaper on VizQL (http://www.tableausoftware.com/wp/dmr-20080215) that might be helpful.

Third, the introduction is too long. The introduction, as it stands, is a hybrid of actual introduction, related work, and implementation details. Specifically, I would encourage the authors to move the paragraph beginning with "The type of interactivity..." to related work and instead use this space to, if anything, describe brushing and linking. The two paragraphs following "The Animint DSL is implemented..." should be moved to the implementation section. (In addition, Animint does not "abandon the DOM standard" since the output includes SVG code, so this line should be removed entirely.) The paragraph on declarative languages ("Finally, another key strength...") should also be moved to the related work section.

Fourth, and finally, the authors frequently make reference to "expressive" code. For example, the caption to Figure 2 reads: "Comparison of code used to define points on a scatterplot. Note that Animint is not as flexible as D3, but it results in shorter, more expressive code. Animint implements the clickSelects and showSelected aesthetics, but D3 and Vega do not." (Once again, the last sentence is irrelevant and should be removed. I would also argue for removing the Vega code as well.) I completely agree with the authors argument that Animint code is shorter and easier to read than the D3 code. However, the 'expressiveness' of a language describes what can be expressed by the language. In this sense, "not as flexible... more expressive" is a nonsense statement. D3 is more expressive as it can express more.

The fact is, however, that comments 2-4 are all easily fixable. While they represent issues that occur throughout the paper, they can all be resolved by moving sections, removing sentences or phrases, and choosing a different word than "expressive". The one exception is that the authors should include a larger comparison with VizQL. Point 1 (about including a discussion of the interaction space enabled by "clickSelects" and "showSelected") is the only real reason that this paper is not complete. Considering that the authors have three more columns of text to work with, I think that adding this section should be more than feasible.

Revisions Required:
-Clean up introduction
-Clean up related work
-Add section on the space of interactions supported by "clickSelects" and "showSelected"

Changes/Questions/Typos:
-Throughout: occasional lowercased animint
-Throughout: would it be possible to italicize animation when it's the system?
-Fig 1: The "Top" caption does not make sense
-s1 "described as a data table" --> tabular data
-s1 "several economic variables": how many?
-s1 Remove "Finally" from "Finally, since one of the variables"
-s1 An Animint designer writes clickSelects=year *within a ggplot2 aes specification*
-s1 previously intractable to implement *in R*.

-s2.1 specialized D3 plots *that cannot* be created
-s3.1 The "half opacity" comment in the paragraph beginning with "The tallrect..." comes out of nowhere
-s3.2 The references to update_selector and update_geom are meaningless in the current context. Describing these functions or just entirely removing mentions of them from the paper are both acceptable solutions
-s4.1 "the user does not have that choice" I do not know what this means
-s7 the CSV blocking described in "Animint's performance..." sounds a bit like imMens (Liu et al., 2013)

Carson Sievert <sievert@iastate.edu> Sat, Jun 7, 2014 at 7:11 AM
To: Toby Hocking <tdhock5@gmail.com>
Cc: Susan VanderPlas <srvanderplas@gmail.com>

That's a bummer. It seems like you guys were very close...the people that were actually familiar with the area had very nice things to say (especially reviewer 4)! I bet if you had a more rigorous user study it would have been accepted.

Anyway, I would love to help out! Are you thinking of re-submitting to InfoVis?
[Quoted text hidden]
--

Carson Sievert
Graduate Student
3414 Snedecor Hall
Iowa State University
Phone: 515-294-8196

Toby Hocking <tdhock5@gmail.com> Sat, Jun 7, 2014 at 7:17 AM
To: Carson Sievert <sievert@iastate.edu>

either that or a journal. I'm inclined to submit to a journal since we would have to wait a whole year to re-submit to infovis.
[Quoted text hidden]