Reviewers

|  |  |  |
| --- | --- | --- |
| R2 | primary | Score: 2.5 |
| R1 | external | Score: 3 |
| R3 | external | Score: 2 |
| R4 | secondary | Score: 3 |

Problems and Plans

Problems are marked with different color in the original review letter

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| --- | --- | --- |
| Problem a): the validation of Constructivism | | |
| Importance: 5 | | Difficulty: 4 |
| Review | **location** | **abstract** |
| Problem: Whether a constructive approach helps with learning a visual design? | | |
| R2 | R2\_Pa\_1 | whether a constructive approach helps with learning a visual design is unfounded |
| R1 | .**R1\_Pa\_1** | in a broad study on the impact of storytelling in information visualization, Boy et al [A] have found that progressively introducing    the elements of a visualization (both the graphical and interactive    elements) does not lead to more online user engagement |
|  | .**R1\_Pa\_2** | I think the authors should lower their    assumptions regarding engagement in the paper—especially in Table 2 |
| R4 | **R4\_Pa\_1** | .   At its foundation, this work assumes that an introductory slideshow that demonstrates how a visualization is constructed would be helpful for  explaining visualizations to novices. This is a largely unsubstantiated claim. |
| Plans:  Instead of claiming that constructive approach will help with learning approach, we will focus on the following assumption for Narvis   1. Visual attention guide is needed when introducing a visual design, especially these have many graphic elements. Narvis can offer a better support for such operations, 2. Progressively introducing the elements of a visualization can prevent information overloading for the audience. 3. Narvis can convert a static visual design to a narrative slideshow, minimizing the efforts needed for editing. (why narrative? why progressively introduce? Further reference is needed) 4. Narvis prevents the users making some common mistakes, such as omitting the explanation of certain channels. 5. Narvis allows the editors to collect the feedback data from their audience | | |

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| Problem b): the evaluation: | | |
| Importance: 5 | | Difficulty: 3 |
| Review | **location** | **abstract** |
| Problem: It is biased to compare Narvis with PowerPoint | | |
| R2 | **R2\_Pb\_1** | **….against editing with PowerPoint only. This is not representative of how people craft their teaching material** |
| R1 | **R1\_Pb\_1** | **…but the prior provides graphics editor capabilities that the latter does not.**  **… more interesting to focus the study solely**  **… or compare NarVis to other, more specialized tools that enable e.g. highlighting and annotating visualizations like the recent ChartAccent** |
| Plans:  We will focus on case study. For the evaluation, we will | | |
| Problem: The evaluation involves only 4 editors with the same background | | |
| R3 | **R3\_Pb\_1** | **…conduct a more thorough user evaluation with more representative users…** |
| Plans: A more thorough user evaluation with more representative users. We will include people who have more experience in data visualization and communication, such like a professor in this field, a businessman whose daily work involves | | |

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| --- | --- | --- |
| Problem c): the theoretical framework:  statics && analysis process && relationship with Narvis system | | |
| Importance: 4 | | Difficulty: 4 |
| Review | **location** | **abstract** |
| Problem: The process to systematically analyze the corpus of 375 visualization is not described | | |
| R2 | **R2\_Pc\_1** | The process to systematically analyze the corpus of 375 visualization is not described |
| **R2\_Pc\_2** | Some statistics about how the corpus span over the different dimensions and elements in Table 1 would be informative. |
| R4 | **R4\_Pc\_1** | assumes a hierarchy of visual events but I don’t believe that this assumption is always true |
| Plans we will examine how the corpus of 375 visualizations can be explained by this framework， offer statistics， point out outliners. | | |
| Problem: the role this framework plays in Narvis is not clear | | |
| R3 | **R3\_Pc\_1** | what role do the relationships described here play in Narvis |
| Plans:  1. People will define the relationship between units in Narvis. This further helps them to order the narrative sequence of these units.  2. We will make this framework closely connect with the implementation of Narvis system, lspecifying how it guides the implementation of Narvis. | | |

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| Problem d): design consideration:  Motivation && reference editor && target context | | |
| Importance: 5 | | Difficulty: 2 |
| Review | **location** | **abstract** |
| Problem: Interviewing and studying 4 TAs are not representative | | |
| R2 | **R2\_Pd\_1** | but I am concerned with the representativeness of the population: only four participants, with similar teaching experience |
| R1 | **R1\_Pd\_1** | Establishing a strong baseline for design is essential for what the authors propose, and it seems they chose the wrong people(4 TA) for that. |
| R3 | **R3\_Pd\_2** | While 4 users were interviewed and then later studied, it is unclear whether they were    selected because they were representative or simply for convenience. |
| Plans: We will involve more people with different backgrosund and more experience as target users. For example, a professor working in the field of data visualization, a businessman whose daily work is to present charts and tables to his customer. | | |
| Problem: The context and the motivation of Narvis is applied is not clear | | |
| R3 | **R3\_Pd\_1** | The introduction discusses    narrative visualization broadly, but the specific ways in which journalists use visualization as a communicative medium differ from, say,    business or enterprise users. |
| R1 | **R1\_Pd\_2** | NarVis was designed, implemented, and evaluated in a very specific context: an    infovis classroom. |
| R4 | **R4\_Pd\_1** | The Introduction lacks flow and should be rewritten. The motivation    and the problem statement are not clearly stated, and it is difficult to    gauge what the paper is about. |
| Plans:   1. Introduction will be rewritten to specify the motivation and working scenario. 2. Since we will invite more people as reference editors, the evaluation will not be specified in an infovis classroom. | | |

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| --- | --- | --- |
| Problem e): system:  implementation details && expressiveness range | | |
| Importance: 5 | | Difficulty: 3 |
| Review | **location** | **abstract** |
| R2 | **R2\_Pe\_1** | but the paper lacks details, and    motivation for specific design choices. For instance, what are the    metrics of saliency and complexity? How robust is the object detection    (aggregation based on color only is limiting)? What are the 8 types of    animation, and for what purpose? How have the templates been designed?    How did you come up with symbol and text annotations? How long does the     automatic extraction take (really a few seconds?)? Etc.... |
| R3 | **R3\_Pe\_2** | What functionality do templates provide? They appear to be central to    the system, and yet their design is described at a very high-level in the    "Templates Design" subsection. |
| R3 | **R3\_Pe\_1** | \* What is the expressive range of Narvis? Only one example (Textflow) is    shown, so it is difficult to assess how many different narratives can be    created using Narvis. |
| Plans:  1. We will give a detailed description of the system implementation.  2. More examples of Narvis will be offered. | | |

|  |  |  |
| --- | --- | --- |
| Problem f): other issues: figure, references, grammar error | | |
| Importance: 5 | | Difficulty: 4 |
| Review | **location** | **abstract** |
| Missing reference | | |
| R2 | **R2\_Pf\_1** | On grammar of graphics and compositions:    - von Engelhardt, Jörg. The language of graphics: A framework for the    analysis of syntax and meaning in maps, charts and diagrams. Yuri    Engelhardt, 2002.    - Leland Wilkinson. The grammar of graphics. 1999.    - Waqas Javed, Niklas Elmqvist (2012): Exploring the Design Space of    Composite Visualization. Proceedings of the IEEE Pacific Symposium on    Visualization, pp. 1–8, 2012.     On visualization sensemaking:    - S. Lee, S. H. Kim, Y. H. Hung, H. Lam, Y. A. Kang, and J. S. Yi. How do    People Make Sense of Unfamiliar Visualizations?: A Grounded Model of    Novice’s Information Visualization Sensemaking. IEEE Transactions on    Visualization and Computer Graphics, 22(1):499–508, 2016.    - L. Grammel, M. Tory, and M.-A. Storey. How information visualization    novices construct visualizations. IEEE Transactions on Visualization &    Computer Graphics, VOL. 16, 16(6):943 – 952, 2010.    - B. C. Kwon, B. Fisher, and J. S. Yi. Visual analytic roadblocks for    novice    investigators. VAST 2011 - IEEE Conference on Visual Analytics Science    and Technology 2011, Proceedings, pages 3–11, 2011. |
| R3 | **R3\_Pf\_2** | . If there is a    difference in the model the authors propose, this should be clearly    articulated in future revisions. If there is no material difference, the    authors might consider shortening that section (or dropping it entirely)    and using the space to elaborate on aspects of Narvis that are more    novel. |
| R3\_Pf\_1 | **. R3\_Pf\_1** | Wilkinson, Leland. The grammar of graphics. Springer Science & Business    Media, 2006.       Wickham, Hadley. "A layered grammar of graphics." Journal of    Computational and Graphical Statistics 19.1 (2010): 3-28.       Segel, Edward, and Jeffrey Heer. "Narrative visualization: Telling    stories with data." IEEE transactions on visualization and computer    graphics 16.6 (2010): 1139-1148 |
| Figures | | |
| R2 | **R2\_Pf\_2** | - Figure 9 : please report standard deviation! Means are useless when  presented alone.  - The paper is riddled with grammatical errors, and the flow is at times  hardly understandable. Please have a native speaker proofread the paper.  - References in Section 2.1. second paragraph seem anecdotical, with no  particular reasons why these ones in particular.  - Figure 7, left is visually cluttered. I don't believe that it is a good  representation for analysis. |
| Misinterpretation of Reference | | |
| R2 | **R2\_Pf\_3** | The authors seem to have    misinterpreted the notion of Piaget's constructivism, as employed by    Huron (on how we learn by experience). |

------------------------ Submission 162, Review 2 ------------------------  
  
Title: Narvis: Authoring Narrative Slideshows for Presenting Visual Designs in a Constructing way  
  
Reviewer:           primary  
  
Paper type  
  
   Application / Design Study  
  
Expertise  
  
   2  (Knowledgeable)  
  
Overall Rating  
  
   <b>2.5 - Between Reject and Possible Accept</b><br/>   
  
Supplemental Materials  
  
   Acceptable with minor revisions (specify revisions in The Review section)  
  
Justification  
  
   This paper introduces Narvis, an interactive tool that supports the  
   authoring of explanatory slideshows of visual designs. The work comprises  
   of 1) a preliminary analysis of visualization compositions (though I am  
   not certain about the methodology employed) resulting in a simple  
   theoretical framework; 2) a former study conducted with post-graduate  
   students who have experience authoring slides for teaching visual designs  
   as TAs and undergraduate students consumers of such slides, which  
   resulted in a set of design goals; 3) Narvis, a novel tool for the  
   assisted authoring of a step-by-step constructive explanatory slideshow;  
   and 4) an evaluation comparing PowerPoint and Narvis from both the  
   authoring perspective (n=4) and audience (n=20).  
  
   The paper has a lot of interesting ideas and insights to offer, however  
   the key contribution of the work is not so clearly delineated. All four  
   aspects have limitations: 1) theoretical framework has not been  
   validated: is it comprehensive, is it relevant?   
   2) only four TAs interviewed for the "Editor" role, which is not  
   representative,  
   3) many technical aspects of the system are not described enough in  
   details,  
   4) evaluation against Powerpoint is somehow unfair.  
  
   Overall, this paper is inspiring (despite the poor flow and numerous  
   grammatical errors) but lacks the scientific rigour to be published as  
   is.  
  
The Review  
  
   I like the ideas presented in this paper, and can certainly relate to how  
   much work it is, as an instructor, to pick a complex visual design and  
   explain all of the visual encodings to an audience non expert in  
   visualization. There are several intersting aspects in this submission:  
   some design tasks are highly informative, such as DA5 (avoid unconscious  
   ignorance), and DE3 (collect feedback) that are often overlooked; Narvis  
   includes many interesting components, such as suggestion of symbol-based  
   annotations and pre-formatted textual annotations, a large set of  
   templates with animations, an organizer of the sequence. All are little  
   nice aspects that, added up, make this paper refreshing and inspiring.  
  
   This said, there are two major issues with this submission: 1) the work  
   builds on the premise that a constructive approach helps with learning a  
   visual design, which is unfounded to the best of my knowledge,(R2\_Pa\_1) and 2)  
   each one of the theoretical framework, design considerations, tool design  
   and evaluation has severe limitations which makes it difficult to assess  
   the validity of each of these contributions individually.  
  
   Regarding 1:   
   The two references cited do not provide evidence, Huron et al. [27]  
   focused on how people can build novel visualizations, and not learn from  
   a step-by-step construction, whereas [9] explains Piaget's theory of  
   constructivism---which highlights the subject's active engagement to  
   construct a representation of what surrounds oneself, rather than discuss  
   a step-by-step tutorial explaining a concept. The authors seem to have  
   misinterpreted the notion of Piaget's constructivism, as employed by  
   Huron (on how we learn by experience**). R2\_Pf\_4** Repeatedly referring to the term  
   "constructing" is highly misleading in this paper.  
  
   There are many other places where references are used to support a claim  
   that is not discussed. For instance, saying that [22,39.46] have "widely  
   discussed the effects of animation on human's attention and perception"  
   is far-fetched! [22] compares staging with all-at-once animation for  
   tracking object and estimating change of value tasks. [39] compares still  
   images against animation of dynamic data on analytical tasks. [46]  
   investigates the visual attraction power of flickering. These account for  
   3 animation effects (out of the 8 promised), and do not evaluate  
   perceptual aspects relevant to Narvis.  
  
   Regarding 2:  
   I am wondering whether "the whole" of this paper "is greater than the sum  
   of the parts"... Taken individually, none of the section is rock solid.  
  
       \* Section 3 describes a theoretical framework built from an analysis  
   of the visualizations listed by Kucher, but the methodology is not  
   explained, and the framework has not been validated. The process to  
   systematically analyse the corpus of 375 visualization is not described,  
   so I am not sure how the authors proceeded to come up with the framework,(R2\_Pc\_1)  
   especially Table 1. Is Table 1 inclusive of all 375 visualizations? Are  
   there always relationships between elements of a visualization, or a  
   hierarchy? Aren't some visualizations comprised of unrelated elements R2\_Pc\_3  
   (i.e. multiple views)? Some statistics about how the corpus span over the  
   different dimensions and elements in Table 1 would be informative. ,(R2\_Pc\_2)  
   The framework has not been validated. I am not certain the authors  
   themselves aren't confused by their own model, provided that they  
   decompose a sunburst visualization as a compound of two donuts, whereas  
   sunburst is listed in Table1, and is a visual unit in itself! This leads  
   to confusing and cast doubts about the classification that the authors  
   came up with.  
  
       \* Section 4 reports on a formative study with TAs authoring  
   slideshows, and students being their audience. The derived design  
   considerations are insightful, but I am concerned with the  
   representativity of the population: only four participants, with similar  
   teaching experience. While informative, these design considerations may  
   not fully reflect the wider editor's needs.**R2\_Pd\_1**  
  
        \* Section 5 describes Narvis. Here, there are many interesting  
   potential technical contributions, but the paper lacks details, and  
   motivation for specific design choices. For instance, what are the  
   metrics of saliency and complexity? How robust is the object detection  
   (aggregation based on color only is limiting)? What are the 8 types of  
   animation, and for what purpose? How have the templates been designed?  
   How did you come up with symbol and text annotations? How long does the   
   automatic extraction take (really a few seconds?)? Etc.... **R2\_Pe\_1** There are many  
   pending questions about the tool, that makes it difficult to assess  
   whether design choices are informed, and proposed solutions are valid and  
   robust.  
  
       \* Section 6. Finally, the user experiment compares editing with  
   Narvis against editing with PowerPoint only. This is not representative  
   of how people craft their teaching material.**R2\_Pb\_1** Most of my colleagues and  
   myself have recourse to vector graphic tools to create personalized  
   visuals when Keynote or PowerPoint fall short. If I were to decompose and  
   explain the visualization from the user study, I would certainly not  
   start with Powerpoint or keynote, but rather create my own visual marks  
   in Illustrator, or edit the snapshot with Photoshop. So I would argue  
   that the experiment, while informative, is biased since it is not  
   representative of what an instructor would do to create such type of  
   tutorial. .**R2\_Pb\_2**  
  
   Some important relevant works that should be mentioned:  
  
   On grammar of graphics and compositions:  
   - von Engelhardt, Jörg. The language of graphics: A framework for the  
   analysis of syntax and meaning in maps, charts and diagrams. Yuri  
   Engelhardt, 2002.  
   - Leland Wilkinson. The grammar of graphics. 1999.  
   - Waqas Javed, Niklas Elmqvist (2012): Exploring the Design Space of  
   Composite Visualization. Proceedings of the IEEE Pacific Symposium on  
   Visualization, pp. 1–8, 2012.**R2\_Pf\_1**  
   On visualization sensemaking:  
   - S. Lee, S. H. Kim, Y. H. Hung, H. Lam, Y. A. Kang, and J. S. Yi. How do  
   People Make Sense of Unfamiliar Visualizations?: A Grounded Model of  
   Novice’s Information Visualization Sensemaking. IEEE Transactions on  
   Visualization and Computer Graphics, 22(1):499–508, 2016.  
   - L. Grammel, M. Tory, and M.-A. Storey. How information visualization  
   novices construct visualizations. IEEE Transactions on Visualization &  
   Computer Graphics, VOL. 16, 16(6):943 – 952, 2010.  
   - B. C. Kwon, B. Fisher, and J. S. Yi. Visual analytic roadblocks for  
   novice  
   investigators. VAST 2011 - IEEE Conference on Visual Analytics Science  
   and Technology 2011, Proceedings, pages 3–11, 2011. **R2\_Pf\_2**  
  
   Other comments:  
   - Figure 9 : please report standard deviation! Means are useless when  
   presented alone.  
   - The paper is riddled with grammatical errors, and the flow is at times  
   hardly understandable. Please have a native speaker proofread the paper.  
   - References in Section 2.1. second paragraph seem anecdotical, with no  
   particular reasons why these ones in particular.   
   - Figure 7, left is visually cluttered. I don't believe that it is a good  
   representation for analysis. **R2\_Pf\_3**  
  
Summary Rating  
  
   2  (<b>Reject</b><br/> The paper is not ready for publication in InfoVis / TVCG.<br/>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  
  
   Reviewers are all sympathetic to this work, finding the idea of improving  
   the process of communicating how to read a visualization to be a "neat  
   idea” (R4), that addresses a "timely and important problem” (R3)  
   through “many interesting components […] that makes the paper  
   inspiring” (R2). The overall design methodology was found to be sound  
   (R1). In particular, reviewers praised a user-centric approach that  
   accounts for both the editor and the consumer audiences (R1,R2,R3), and  
   appreciated that the design goals, extracted from the formative study  
   with users, were referenced thorough the system description, helping with  
   a better understanding of the motivation behind specific features (R3).  
  
   In general, while there was an agreement on the above positive aspects of  
   this research, there was a great deal more concern on several critical  
   issues:  
  
   \* Focus and motivation:   It is unclear who the target audience is (R3),  
   and what the targeted contexts and uses are (R1). The tool was designed  
   and evaluated in a very specific context, and the design and results do  
   not necessarily transfer to other contexts (R1). The motivation is not  
   clearly stated and should be better delineated (R4).  
   \* Constructivism:    R1 pointed to a potential misunderstanding of the  
   notion of constructivism as introduced by Piaget and used in Huron —  
   both references that are used to support the idea of step-by-step  
   explanatory slideshow. The concept here is misused: as R1 recalled in the  
   discussion : Put very basically, constructivism is how we build abstract  
   knowledge from concrete experiences—not necessarily how we understand  
   complex things like visualizations by being introduced to them  
   step-by-step. They added that "the repetition of the word "constructing"  
   (starting in the title of the paper) indicates a deep misunderstanding of  
   the theory [...] which is a dangerous shortcut". R1 and R4 also both  
   point to the fact that assuming that a slideshow would help in this  
   context is a largely unsubstantiated claim.   
   \* Theoretical framework:   Reviewers shared concerns about the validity  
   of the theoretical framework presented in Sec. 3, especially whether the  
   notion of hierarchy between visual units is founded (R1,R2) and whether  
   this notion is central to the templates (R3). In addition, R2 requests  
   further details about the methodology used to extract the dimensions of  
   the framework, and wished there was some more discussion and statistical  
   details about how the framework is inclusive of all of the studied  
   visuals.   
   \* Design considerations:   Two reviewers question the validity of relying  
   on only four TAs with little experience, to distill the design  
   considerations for their system (R1, R2). It was felt this sample is too  
   small, and not representative of the range of users who may be targeted  
   by Narvis.  
   \* Details on the system:    It was felt that that the system description  
   was insufficient: there are too little details about the algorithms and  
   their robustness, how the templates were generated, what functionality  
   they provide, how editors can edit them, etc. (R2, R3).  
   \* Evaluation:    Reviewers were not impressed by the evaluation: only one  
   example was featured and therefore it was felt that the paper fails at  
   demonstrating the expressive range of the system (R3), the population of  
   editors was too narrow (R3), and the comparison with PowerPoint was felt  
   not representative of typical editors’ workflow (R1,R2)  
  
   In addition, the reviewers pointed at several issues related to  
   unsubstantiated claims and far-fetched discussions, missing related work  
   and presentation issues.  
   \* There are a lot of strong claims, where cited references do not support  
   the claims (R1,R2)  
   \* R1, R2 and R3 point to important references to be included  
   \* All reviewers complained about grammatical errors and other minor  
   presentation issues.  
  
   In summary, while this work has some potential, the negatives outweigh  
   the positive aspects in the current submission. The issues that were  
   pointed by the reviewers need substantial work, that was felt to not be  
   feasible within the revision cycle.   
  
Second round comments (public)  
  
   (blank)  
  
Second round supplementary materials check  
  
   (blank)  
  
Second round supplementary materials comments  
  
   (blank)  
  
  
------------------------ Submission 162, Review 1 ------------------------  
  
Title: Narvis: Authoring Narrative Slideshows for Presenting Visual Designs in a Constructing way  
  
Reviewer:           external  
  
Paper type  
  
   Application / Design Study  
  
Expertise  
  
   3  (Expert)  
  
Overall Rating  
  
   <b>3 - Possible Accept</b><br/> The paper is not acceptable in its current state, but might be made acceptable with significant revisions within the conference review cycle.<br/>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 paper presents NarVis, a semi-automated slide-deck design tool for  
   introducing complex visualizations to new audiences. While the premise is  
   interesting, I find the work limited in several aspects, which leaves me  
   quite undecided as to whether it should be accepted or not.  
  
The Review  
  
   I like the underlying concept of NarVis: introducing how a visualization  
   should be read within the context of the visualization itself; and I  
   believe the overall design methodology/approach the authors use is sound.  
   I also particularly appreciate the fact that the authors took into  
   consideration (for the experiment) not only the editors’ point of view,  
   but also the audiences’ appreciation of the generated slideshows. I  
   feel this “reception” dimension is often overlooked in similar  
   studies, and I congratulate the authors for exploring it.  
  
   That said, I have some important issues with the paper, which I detail  
   below.  
  
   First, in a broad study on the impact of storytelling in information  
   visualization, Boy et al [A] have found that progressively introducing  
   the elements of a visualization (both the graphical and interactive  
   elements) does not lead to more online user engagement.**R1\_Pa\_1** Admittedly, Boy  
   et al do not present qualitative information regarding how these  
   introductions may have helped viewers better understand what they were  
   looking at, but they found at a large scale that such slideshow  
   introductions were not helpful for triggering deeper interactions with  
   the interface. Therefore, I think the authors should lower their  
   assumptions regarding engagement in the paper—especially in Table 2. **R1\_Pa\_2**  
  
   Second, I see a major confound in using the TAs’ as reference editors  
   for the design of introductory slideshows to visualization. As the  
   authors point out, the students they interviewed “complained that they  
   had experienced information overload in reading slides.” This means the  
   TAs were likely not good slide designers. In addition, the authors  
   mention that the TAs are “prone to treat some visual grammars as  
   self-evident that need no explanation.” This means they are likely not  
   good communicators. Establishing a strong baseline for design is  
   essential for what the authors propose, and it seems they chose the wrong  
   people for that. **R1\_Pd\_1**  
  
   Third, I find the authors tend to over-generalize the usefulness of  
   NarVis. While the concept can most-likely be extended to other uses and  
   audiences, I have some doubts regarding the tool itself. NarVis was  
   designed, implemented, and evaluated in a very specific context: an  
   infovis classroom. **R1\_Pd\_2** It also assumes that editors are not the original  
   designers of the visualization, which leads me to wonder whether the tool  
   is truly intended to introduce visualizations in their context of use  
   (i.e. broader visualization platforms/tools), or whether it is simply  
   intended as a self contained tool for creating slides to present in  
   class.   
  
   Finally, I see an important confound in comparing NarVis to PowerPoint.  
   Admittedly, both enable the creation of slides, but the prior provides  
   graphics editor capabilities that the latter does not. In this context, I  
   think it would have been more interesting to focus the study solely on  
   what the TAs initially sketched, and how easily they could implement and  
   amend their ideas using NarVis (rather than trying to compare with  
   another piece of software). Another possibility would have been to  
   compare NarVis to other, more specialized tools that enable e.g.  
   highlighting and annotating visualizations like the recent ChartAccent  
   [B].  
**R1\_Pb\_1**  
   ––––––––––––––  
  
   [A] Boy, Detienne, Fekete, 2015. Storytelling in Information  
   Visualizations: Does it Engage Users to Explore Data?  
  
   [B] Ren, Brehmer, Lee, Höller, Choe, 2017. ChartAccent: Annotation for  
   Data-Driven Storytelling  
  
  
------------------------ Submission 162, Review 3 ------------------------  
  
Title: Narvis: Authoring Narrative Slideshows for Presenting Visual Designs in a Constructing way  
  
Reviewer:           external  
  
Paper type  
  
   System  
  
Expertise  
  
   3  (Expert)  
  
Overall Rating  
  
   <b>2 - Reject</b><br/> The paper is not ready for publication in InfoVis / TVCG.<br/>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 with minor revisions (specify revisions in The Review section)  
  
Justification  
  
   The authors present Narvis, a system for authoring slide shows to explain  
   the composition of static visualizations. The system leverages several  
   potentially interesting techniques including identifying and decomposing  
   a static visualization into its constituent visual marks, determining the  
   complexity of encoded information, and suggesting appropriate narrative  
   structures. The authors follow a user-centric design process,  
   interviewing 4 users at the start to determine the goals of the system,  
   and evaluating the resultant system with them again.  
  
The Review  
  
   The authors seek to address a timely and important problem -- how can  
   tools simplify the process of communicating through data visualization?  
   Narvis presents an interesting solution by automatically decomposing a  
   static visualization into constituent marks (e.g., dots, lines, bars,  
   etc.) and then offering narrative "templates" that reintroduce marks  
   one-by-one via a slideshow structure. The narrative structure offered by  
   templates is based on mark visual saliency, and the complexity of encoded  
   information. A graphical user interface, and a palette of animation and  
   annotations, is available to author the final narrative.  
  
   I commend the authors for following a user-centric design process. By  
   interviewing 4 users at the start of their process, the authors were able  
   to articulate 6 design goals. These goals were referenced throughout the  
   system description, which was helpful in determining why specific  
   features were included. Moreover, the final system was evaluated with  
   users (albeit the same, and only, 4 users). I was happy to see that the  
   authors not only considered the "editors" (the user group most  
   visualization system research focuses on) but the "general audience" (or  
   visualization consumers) as well.  
  
   While Narvis is potentially promising, the paper's exposition makes it  
   difficult to understand various aspects of the systems contribution it  
   seeks to make. In particular, after several careful readings of the  
   paper, I am left with the following important questions which make it  
   difficult for me to return a higher score:  
  
   \* Who are the target users for Narvis? The introduction discusses  
   narrative visualization broadly, but the specific ways in which  
   journalists use visualization as a communicative medium differ from, say,  
   business or enterprise users. **R3\_Pd\_1** Identifying target users is important not  
   only to further guide the goals+design process, but is also useful in  
   evaluating whether the resultant system meets their needs. While 4 users  
   were interviewed and then later studied, it is unclear whether they were  
   selected because they were representative or simply for convenience. **R3\_Pd\_2**  
  
   \* What is the expressive range of Narvis? Only one example (Textflow) is  
   shown, so it is difficult to assess how many different narratives can be  
   created using Narvis. **R3\_Pe\_1** For future revisions, I might recommend that if the  
   authors are not able to conduct a more thorough user evaluation with more  
   representative users, **R3\_Pb\_1** that they consider dropping that section entirely  
   and instead replacing it with one demonstrating a diverse range of  
   narratives constructed with Narvis.  
  
   \* What functionality do templates provide? They appear to be central to  
   the system, and yet their design is described at a very high-level in the  
   "Templates Design" subsection. **R3\_Pe\_2** R3\_These parts of the video were also  
   difficult to follow as simply adding templates to the visual units  
   appeared to generate a lot of sequencing and animation functionality.  
   What does a template generate? How can users customize it? What is a  
   "well-considered narrative sequence" and how is that determined? Is this  
   based on the relationships described in Sec. 3.2? If so, how is the  
   "complexity of encoded information" measured? Are all templates valid for  
   all visual units?  
  
   \* If templates are not based on Sec. 3.2, then what role do the  
   relationships described here play in Narvis? For example, it was unclear  
   how the bidirectional or unidirectional relationship between visual units  
   affects the narrative Narvis might generate**. R3\_Pc\_1**  
  
   \* Finally, while several important narrative visualization works are  
   cited, the authors miss key parts of the prior work including the  
   following:  
  
     Wilkinson, Leland. The grammar of graphics. Springer Science & Business  
   Media, 2006.  
  
     Wickham, Hadley. "A layered grammar of graphics." Journal of  
   Computational and Graphical Statistics 19.1 (2010): 3-28.  
  
     Segel, Edward, and Jeffrey Heer. "Narrative visualization: Telling  
   stories with data." IEEE transactions on visualization and computer  
   graphics 16.6 (2010): 1139-1148. R3\_Pf\_1  
  
     The first two are particularly important as the model of visualization  
   composition the authors propose in this paper bears striking resemblance  
   to the grammars proposed by Wilkinson and Wickham. If there is a  
   difference in the model the authors propose, this should be clearly  
   articulated in future revisions. If there is no material difference, the  
   authors might consider shortening that section (or dropping it entirely)  
   and using the space to elaborate on aspects of Narvis that are more  
   novel. R3\_Pf\_2  
  
  
------------------------ Submission 162, Review 4 ------------------------  
  
Title: Narvis: Authoring Narrative Slideshows for Presenting Visual Designs in a Constructing way  
  
Reviewer:           secondary  
  
Paper type  
  
   System  
  
Expertise  
  
   2  (Knowledgeable)  
  
Overall Rating  
  
   <b>3 - Possible Accept</b><br/> The paper is not acceptable in its current state, but might be made acceptable with significant revisions within the conference review cycle.<br/>If the specified revisions are addressed fully and effectively I may be able to return a score of '4 - Accept'.   
  
Supplemental Materials  
  
   Acceptable  
  
Justification  
  
   see below  
  
The Review  
  
   The paper introduces a tool for creating narrative slideshows that can be  
   used to explain complex visualizations to novices. NarVis is a neat idea.  
   The tool automatically decomposes a visualization based on its visual  
   elements, then allows the designer to create explanatory slides to  
   demonstrate how the visualization is constructed. Done well, NarVis could  
   be an extremely useful tool.   
  
  
   That said, I have reservations about this work for the following reasons:  
   1.   At its foundation, this work assumes that an introductory slideshow  
   that demonstrates how a visualization is constructed would be helpful for  
   explaining visualizations to novices. This is a largely unsubstantiated  
   claim. **R4\_Pa\_1** To my knowledge, there is no existing work demonstrating this to  
   be true.   
  
   2.   NarVis also assumes a hierarchy of visual events but I don’t believe  
   that this assumption is always true. **R4\_Pc\_1** For instance, examining the donut  
   chart in Figure 2, the order in which the visual elements should be  
   presented is not clear.   
  
   3.   The Introduction lacks flow and should be rewritten. The motivation  
   and the problem statement are not clearly stated, and it is difficult to  
   gauge what the paper is about. **R4\_Pd\_1**  
  
  
   4.   The paper needs expensive proofreading. There are numerous grammatical  
   errors (far too many to be listed here).