DSR ACADEMY

20-11-2024 HAMED ZOLBANIN – TRANSCRIPT

2 SPEAKERS
Sebastian Reiners
Hamed Zolbanin

Duration
24m 59s

START OF TRANSCRIPT

[00:00:02] Sebastian Reiners
Hello everyone, and welcome to another round of our interviews with DSR Academy. My name is Sebastian, and I'm very happy to welcome Hamid Zolbanin today, who is an associate professor with the MIS and Business Analytics at the University of Dayton in Ohio and also an associate editor at the Journal of Business Analytics and Frontiers. We're going to talk about design science today. But before we do that, Hamid, do you mind introducing yourself a bit? What do you like to do?

[00:00:31] Hamed Zolbanin
Thank you very much. It's my pleasure being here. I honestly appreciate your invitation to have this interview. As you mentioned, my name is Hamid Zolbanin. I'm currently an associate professor at the University of Dayton in Ohio. This is my second appointment. Prior to this, I was a faculty member at Ball State University, which is not too far from here, within two hours from where I am at the moment. As you also mentioned, I've been involved with the Journal of Business Analytics since its inception, and it's one of the journals that is under the same organization or administration that runs EJIS as well. It's a rising journal, and we expect that it's going to be better ranked in the near future if it's not out of scope or out of reach.

[00:01:31] Sebastian Reiners
Perfect. Amazing. You're doing, besides your editor work, a lot of research as well. One of these research papers is very interesting to me and really fits into this DSR context. It's about to be published, as in it's coming out next year. But it's already available as a preprint. The title of the paper is a process model for design-oriented machine learning research in information systems, which you will publish in the Journal of Strategic Information Systems. It's a very recent piece and might change the way we conduct design science, at least in a few areas. And this is going to be the focus of today. The paper I want to talk to you about. Maybe let's start before the paper even. Why did you write the paper?

[00:02:24] Hamed Zolbanin
Well, it's quite a long story. I have to cut it short, but when I started conducting research as a result of the exposure that I had in my school, the people that I worked with were involved in doing and conducting research using machine learning to address some relevant problems. These were mostly in healthcare at the time. Then it expanded to other areas as well. We noticed and encountered several issues when conducting that kind of research. The major problem that I could summarize was that, as it has also been noticed in the buildup of design science, let's say like 20 years ago, before that, there were some, I would say some groups or researchers that had a very narrow focus on what research is. They will not consider design science or design-oriented machine learning, as I'm addressing in that paper, as true research. They have some definition in their minds of the pieces of research that this kind of research doesn't have. And so, a lot of times, when we tried to submit these papers to different journals, we received some comments that we thought were not appropriate. When reading about the history of design science, you see all those

comments from design science scholars as well. They say that they had difficulty getting tenure because their papers were not accepted in mainstream journals in IS. That was the kind of experience that we had as well. The situation has gotten better in recent years, but initially that was a serious problem. All that accumulation of the experiences that were not too positive led me to think about writing this piece that kind of puts forward the argument that design-oriented machine learning is a subset of design science. And if you already have standards on how to address and evaluate design science research, you should be able to transform that and adapt that for design science machine learning as well.

[00:05:15] Sebastian Reiners
And coming from that idea, what would you say was the idea you do try to convey? What is the idea you try to summarize in this paper?

[00:05:26] Hamed Zolbanin
There are a few ideas I would like to mention. The main one—I will expand on the ideas that are mentioned in this paper further later. But the main idea is that design science machine learning, or design-oriented machine learning, as we put it in that paper, is a subset of design science research, albeit with its own characteristics and features that need to be adapted. Specifically, to match the way it is conducted and presented. So it's a subset of design science research. In this paper, we're trying to characterize what is specific about this subset.

[00:06:16] Sebastian Reiners
Okay. And now that we know the idea and basically the motivation behind writing the paper, what do you think, or what are you particularly proud of? What were you able to contribute with this paper to the field?

[00:06:35] Hamed Zolbanin
As a short answer to that, it would be the identification or a formalization of a process model, or, in other words, a standard for conducting design-oriented machine learning research. If I wanted to expand further on that, I would say that design science research was developed before and kind of independently from the machine learning approaches to research. Especially in the IS community. So the two groups, the two schools, are kind of detached or disconnected from one another. And from my own experience, when I tried to publish a paper that argued that machine learning, design-oriented machine learning, is a subset of DSR, the reviewers were kind of bewildered. They said they hadn't seen such a look at machine learning. But they also wanted a lot of justification for saying something like that. The argument went into the epistemology and philosophy of science. I didn't want to go too far in it. It was beyond my expertise. So it got me to the point that I have to write a piece that shows the similarities of design-oriented machine learning research with DSR and then use that as a building block to move forward in the future. In the process, I was lucky that there were two, probably even more. I recall at least two editorial papers, one at MIS Quarterly and one at ISR, and then another one that was not editorial, which is a regular paper. But it also helped a lot with our discussions. It was a recent piece by Alan Hevner and his colleagues at DSS Decision Support Systems. They also said that machine learning has a lot of different approaches, and AI research has different approaches and different types. One of them is design-oriented. So that helped us in our argument that saying that machine learning could be viewed as a subset of design science research. So in that paper in table one, we compared the similarities between machine learning and design science research. Some major points are that they both try to find a solution to a problem they have. They use theoretical frameworks like design science uses design theories, and machine learning is based on statistical learning theories. So kind of there

they use the same approach. They have an iterative process. They are heavily based on evaluation and so on. So there are a lot of similarities between the two. And then we argue that there is a lack of a standard process to conduct, present, and evaluate design-oriented machine learning research in the IS community. Although different authors have used different ways, sometimes using the standard that is used in the professional communities in the industry. But that standard was non-existent prior to this. So we are trying to kind of communicate that. Hey, those of you who are doing research in this area, maybe you could follow this approach so that it's kind of more standard and the reviewers know what they have to look for. Because sometimes, especially in the past, it's less now, when you submitted a paper to some of these leading journals, it would be sent to some reviewers that were from a different perspective, from a different paradigm. They would not be able to give an honest and relevant evaluation of the paper. We hope that this is going to help in that process. It was a long answer to your question.

[00:11:02] Sebastian Reiners
It's actually a very, very interesting answer. I was just looking at an interview with Richard Baskerville, and he talked about the history of design science. He mentions pretty much the same problems in the beginning of the design science research field that you just talked about, about the field of design-oriented machine learning. Reviewers don't know how to evaluate it or how to rate the paper. So you're hitting very close to the heart with a lot of people trying to do research in that area and therefore probably hitting a need. And he also very much said, Okay, we need more approaches and to include more discipline. So I think your paper very much hits the sweet spot. What we need right now in the design science field.

[00:11:49] Hamed Zolbanin
Thanks. Thank you.

[00:11:51] Sebastian Reiners
Okay. Maybe coming a bit to actually writing the paper, you talked a bit about what you are producing or what your final product is about. But can you maybe go about the process of engaging with your co-authors with the hardest moments, the decisions you had to make while writing the paper?

[00:12:16] Hamed Zolbanin
Sure. So we had a few sessions of brainstorming on what should be included in the paper. I initially wanted to go back to the history of design science and how it was developed. But, after a few rounds, we thought that it might be too controversial. So let's not do that and just focus on presenting this framework in this process model. That way, the comments mainly came from my co-author, and I agreed with that way we're not creating tension, but instead we are trying to be positive and contribute to the field. So, we decided that it could be that our research, our paper, or our discussion could be shifted towards providing this process model and delineating that in order to conduct a design-oriented machine learning study. These are the steps you have to follow. And that comes after the recent wave of increase in machine learning studies in IS research. Especially in the last few years. So we thought that it's timely and relevant, and we just focused on developing that process model. Some of the things that took us a bit more time to delineate and put into writing were thinking about, so in that paper, if you go to the figure that shows the process model, thinking about what the entry points are. We are just adapting Ken Peffers paper from JMIS. But now for design science machine learning studies. So we had to consider what the entry points are and how they are related to one another. Since the whole process is an iterative process, how are the different phases related to one another? If there is a need for an iteration from phase A, for example, or phase Z, where would you go, and

what are the possibilities? So thinking about that in detail took a bit, and it was probably the more challenging part of the process. But we were glad that we could pull it through and make it happen.

[00:15:05] Sebastian Reiners
I mean, there are a lot of decisions you have to make, which are very, very small, but it is very interesting to hear what the main challenges during the writing were. Definitely. So you are providing guidance, so to say, or future guidance, maybe. What we do in the academy is try to guide young DSR researchers, including myself, to conduct research in the future. So maybe coming from your expertise as an author and as an editor as well, what would you recommend to young design science research researchers regarding publishing in information systems?

[00:15:49] Hamed Zolbanin
Well, I'm kind of young as well and not very experienced. But from these few years of experience that I've garnered through my interactions with different journals, what I can share is that for young researchers specifically conducting research in design science, probably the most important thing is that they should be persistent. Along the way, they may get a lot of pushbacks. As I said, still now, about two decades after Hevner's paper on design science in MIS Quarterly, there are still chances that their paper will be evaluated by someone who is not from a design-oriented perspective. So persistence and patience are important. If your paper gets rejected, or it doesn't get a fair evaluation, don't give up. Continue that process with persistence, and you will be able to find a good home for your papers. So that's one thing. I made a few mistakes along my career. When I got too many rejections, I tried to move away from design science for a while and try to do other kinds of research. But since it was not my main interest, I was doing it because I kind of thought I had to. I was not able to continue it for a long time, so I had to come back to this approach, this paradigm that made more sense to me. It clicked with me, and we were on the same wavelength, kind of. So the first and most important thing is to be persistent and patient. And I would say that one good approach would be that they follow very closely some of the exemplar studies that they can find that are very similar to their own study, their own research. Follow the approaches and follow the steps that have been taken in those. And over time, by doing one, two, or three of those, they will become better at it. And they can do design science research independently and more successfully. To those folks conducting research in design-oriented machine learning, I would say they probably will have a little bit more difficulty in proving their research. In contrast to behavioral studies and some other design science research in machine learning studies, proving that you have a major contribution is a bit harder. A lot of times the reviewers would say this method already exists. What are you doing? What is your contribution? So they expect that a design-oriented machine learning study comes up with a new algorithm every time, a new model every time, or a new paradigm every time. Even in computer science, that is not the case. Interrupting algorithms, paradigms, or approaches occur maybe every decade or every few years. That is a very far-reaching and unrealistic expectation from such papers. So one other area that is my goal to contribute to this area is to delineate and further explicate what the contributions of these kinds of studies are. So those young researchers that are conducting research in this area have to think twice about the contribution of their paper. Clearly mention that, compare it with the existing research and existing literature, and differentiate their study with that body of research to say clearly that this is what we are doing, and the current literature lacks that. These are the main things that come to mind regarding research in this area.

[00:20:42] Sebastian Reiners
I mean, that's quite a lot to use and quite a lot to do, actually. And when talking to other researchers, it's DSR is so complex, it's so difficult to position oneself to see the impact for the environment, maybe. So definitely, there's a lot for you to go about and to do. Lastly, you kind of present a new pathway for how we can conduct design science research. You were mentioning the editorial from the ISR, which also presents some pathways for DSR and on artificial intelligence. And you kind of do this for design-oriented machine learning. Perhaps you can go a bit into this desire you might have for the field. Any recommendations for other researchers? I mean, you were talking about publishing, but is there any desire for you in the field that you would like the field to move into?

[00:21:45] Hamed Zolbanin
Personally, my desire is that it would be great if more journals would be accepting design-oriented research in IS. I was conducting research a few years ago on the extent of publications and this kind of research, especially in machine learning, in mainstream IS journals. And I noticed that only four out of the traditional eight journals of the basket had published machine learning studies in them, and the majority of them were in special issues. I think that's going to happen. It's a natural paradigm shift with the changes in how AI is used. That's going to happen. I would like to see that in more journals in our field. So pretty much, if you consider the traditional basket of eight, now they are like the basket of 11 or whatever they call it. The premier IS journals, all of those, accept behavioral studies. They publish behavioral studies. But I would like that the same way they accept behavioral studies, they also publish design science research studies. Because these are two sides of the same coin. You design something, and it is used for a while in a context. Then you want to see how users engage with that and study the behavior of the users of the organization or the system and how it interacts with the users. So that's my desire. I don't know if it's going to happen or not, but I hope it does.

[00:23:49] Sebastian Reiners
I certainly do too. And looking at the editorial, speaking to some of the editors, I do have a feeling there is a hunger for design science research. Also in the top journals you are mentioning, like MISQ and ISR. So the hope is there, but the future will tell us whether our desire is going to be fulfilled.

[00:24:12] Hamed Zolbanin
Hope so too.

[00:24:14] Sebastian Reiners
Is there anything you would like to share as last words, or do you think you have everything covered?

[00:24:21] Hamed Zolbanin
I just wanted to thank you for this opportunity one more time. It was a pleasure getting to know you and what you're doing in the Design Science Academy. I'll be interested in getting connected with you and keeping in touch with the academy in the future. So that's all. I just appreciate you reaching out to me and conducting this interview.

[00:24:54] Sebastian Reiners
We will definitely try to do that. Thank you very much.

END OF TRANSCRIPT