



The German Research Community

within ACM SIGCHI 2010–2020

Insights

- The HCI research landscape shows a tentatively positive trend toward increased diversity.
- However, the German HCI research community needs to strive to become more inclusive in all dimensions.
- We hope to stimulate a discussion and foster reflection on the current German HCI research landscape.

The global human-computer interaction (HCI) research community strives for more diversity. This aspiration includes both the diversity of HCI scholars and the diversity of HCI study participants and potential users. Recent work about the HCI research landscape shows a tentatively positive trend toward increased diversity [1,2]. However, these works also highlight that there is still a lot of work to be done to build an inclusive, global HCI research community. We believe the present must be understood to foster change and shape the future. As a first step, here we analyze the German HCI research landscape of the past 10 years

with a focus on gender diversity, nationality diversity, and research output at ACM SIGCHI conferences.

More precisely, this article aims to identify the actors and groups working on HCI topics in Germany over the past decade. We contribute an analysis of the contributions that the German HCI research community made to the ACM Conference on Human Factors in Computing Systems (CHI) and other SIGCHI conferences from 2010 to 2020. Furthermore, we outline the knowledge contributions and key HCI researchers of this period. In doing so, we hope to stimulate a discussion and foster reflection on the current German

HCI research landscape. We ultimately aim to capture the German research community's evolution in researching HCI topics over the past decade.

The German HCI research community is one of the most active HCI communities in the world, with many contributions to various SIGCHI conferences. This can be seen at websites such as <https://www.whatthehci.com/>, developed by Kashyap Todi, which captures statistics about papers accepted at the CHI conference, and <https://www.germanhci.de>, which is rooted in the organization of German HCI events at CHI conferences and provides a platform for HCI research in Germany.

To chart the activities of the German research community within SIGCHI conferences from 2010 to 2020, we took both a quantitative and a qualitative approach. First, we analyzed full-paper contributions published at CHI [3] and other SIGCHI conferences from 2010 to 2020 by research groups and faculty members located in Germany. Then, we identified HCI researchers located in Germany who shaped the field in the country in a variety of ways. We used the list of German SIGCHI Academy members as a starting point to reflect on the knowledge that German HCI scholars produced within the past decade. We discuss the knowledge contributions and the impact of specific HCI scholars on Germany's HCI research landscape in a more qualitative way.

HCI RESEARCH GROUPS IN GERMANY 2010–2020

We identified HCI research groups in Germany using a multistep approach. First, we created a list of all full universities in Germany. According to the Wissenschaftsrat (the German Council of Science and Humanities, an advisory body to the federal government; <https://www.wissenschaftsrat.de/download/2020/8675-20.html>), there

are 2,600 computer science professors in Germany (data from 2018). About 1,000 work at universities; the remaining 1,600 are employed at universities of applied sciences. Based on this list, we identified all the chairs at full universities in Germany that have a variation of one or more parts of the following terms in the designation of their chairs or research group names: *human/people*, *computer/technology/media*, and *interaction*. Then, we created a table that contained the universities, the chairs/research groups, and designated faculty members. We also identified additional relevant research groups by using [whatthehci.com](https://www.whatthehci.com/), the ACM Digital Library, and the DBLP. The list includes groups at universities of applied sciences and non-university institutes (e.g., Fraunhofer institutes, Max Planck institutes). Mainly using DBLP, we analyzed whether the identified groups regularly publish at CHI and SIGCHI conferences. Based on the number of published full papers from 2010 to 2020, we identified the first, second, and third venues in terms of publication volume (Figure 1). As a third step, we sent the initial version of this paper and the spreadsheet with the collected data to the researchers identified in our analysis and asked them to check their own data, to let us know if anyone was missing from the spreadsheet, and for general feedback.

As this article aims to identify the longer-term actors and groups working on HCI topics in Germany, we analyzed which research groups regularly published in the main proceedings of CHI or contributions at other SIGCHI conferences. We defined actively publishing at CHI as full-paper contributions at CHI in three separate years within the past 10 years. We defined actively publishing at SIGCHI conferences as at least five full-paper contributions at all SIGCHI conferences throughout the past decade. We initially identified 68 HCI working groups established at German universities and other research institutes (see Table 1:

http://interactions.acm.org/uploads/CHI_in_Germany.xlsx).

Our results showed that even though HCI as a research field typically attracts a diverse set of researchers and disciplines, the German HCI community is quite homogeneous and small. Overall, we identified only 68 groups that focus on HCI research, the majority of which are situated in computer science or a related field. Hence, about 5 to 6 percent of all computer science professorships at German universities focus on HCI.

The majority of groups and faculty members (80 percent) are situated in computer science or a closely related field (e.g., business informatics, software engineering). The remaining groups are located in other departments or faculties, such as arts and humanities or psychology. Interestingly, only 49 percent of the groups we identified have regularly published at CHI ($n=33$). Thirteen additional groups regularly publish at SIGCHI conferences. Thus, about 68 percent of the research groups we identified actively contributed their research to SIGCHI conferences from 2010 to 2020.

Compared with all computer science professors in Germany, the share of female professors in all HCI research groups we identified ($n=68$) is higher (21 percent compared with 13 percent in computer science), but the number is also only comparable to the share of female professors across all academic subjects in Germany (25 percent in 2018). However, looking at female professors in Germany who regularly published at CHI from 2010 to 2020, the share is far lower (6 percent), thus below the average of female professors in computer science in Germany (13 percent) [4]. If we look only at groups that primarily publish at CHI (Figure 1), then there is just one female researcher in this selection. The female researchers in the German CHI community appear to mainly focus on other SIGCHI conferences such as IUI, MobileHCI, or TEI (Figure 1). Therefore, we see a lot of potential for more diverse participation in the main HCI venue, the CHI conference.

The proportion of international scholars employed at German universities is also quite low. This uneven distribution is reflected in the nationality of researchers in computer science in Germany. Overall, about 5

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percent of the computer science professors in Germany are foreigners. Our analysis shows a similar result. Apart from two exceptions (also from a German-speaking country), all HCI research groups are, to the best of our knowledge, led by people with German citizenship. This is in stark contrast to other countries, where the research groups are more diverse.

Looking at the main conference venues, based on the conference contributions, we saw other interesting trends. While CHI is the most prominent main conference among the 46 groups that regularly publish at SIGCHI conferences, MobileHCI and AutomotiveUI are the backbone of the German CHI research community. More than 25 percent of the 33 groups that mainly publish at CHI have those conferences as their second conference theme. TEI and ISS are additional popular conferences for German researchers.

We are aware that such quantitative or bibliographic approaches to evaluate subfields of computer science have their limitations [5]. Thus, next we describe in more detail key figures who shaped the German community in the past decade.

KEY HCI RESEARCHERS IN GERMANY 2010–2020

The CHI community itself identifies members who “made a significant, cumulative contribution to the development of the field of HCI,” selecting them into the ACM SIGCHI Academy. Among them, Elisabeth André (University of Augsburg), Patrick Baudisch (Hasso Plattner Institute), Albrecht Schmidt (LMU Munich), and Volker Wulf (University of Siegen) hold professorships at German universities. All four have contributed significantly to the development of the HCI research landscape within Germany and beyond.

Elisabeth André is an expert in multimodal machine interaction, tangible user interfaces, and embodied conversational agents. She publishes most prominently at venues such as IUI and ICMI. Her research has a significant influence on the HCI field in Germany and beyond. In 2017, she received the SIGCHI Academy award. Since 2001, she has held a professorship at the University of Augsburg, where she founded the chair

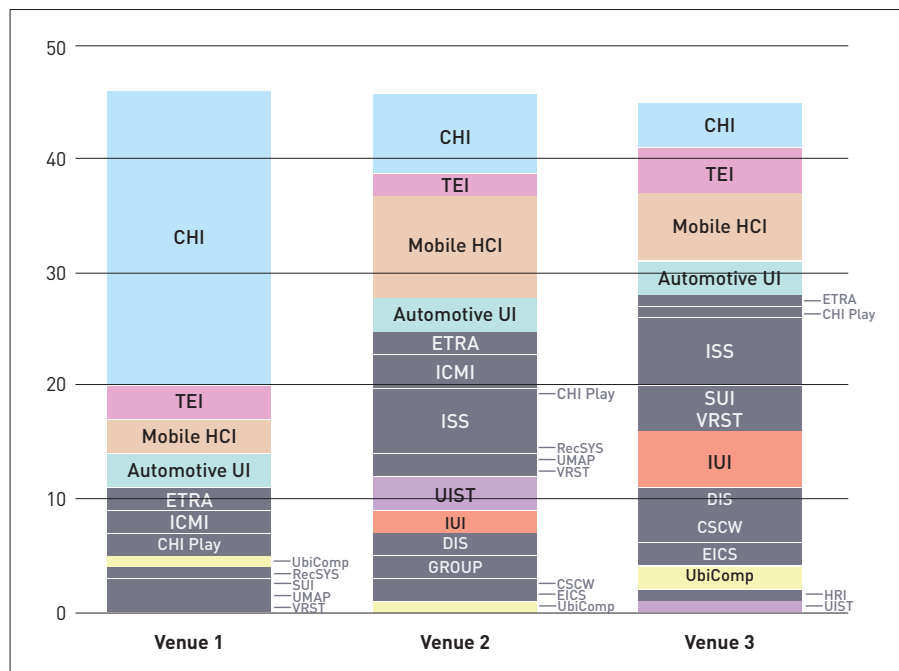


Figure 1. Main conferences targeted by the German HCI community from 2010 to 2020. We identified the first, second, and third venues in terms of publication volume.

of human-centered multimedia.

Before, she was a principal researcher at the German Research Center for Artificial Intelligence (DFKI) in Saarbrücken, Germany.

At Hasso Plattner Institute (HPI), Patrick Baudisch built a group with a strong technical focus on natural user interfaces. His main publication outlets are CHI and UIST. Since 2013, he has been part of the SIGCHI Academy for his work on creating interactive devices that explore the nature of spatial interaction. Baudisch took over a professorship at HPI in 2008, where he is chair of the Human-Computer Interaction Lab. Before that, he worked as a research scientist at Microsoft Research and Xerox PARC and obtained his Ph.D. at Darmstadt University of Technology in Germany. His Ph.D. graduates (<https://hpi.de/ baudisch/people.html>) hold faculty positions at Carnegie Mellon, the University of Chicago, ETH Zurich, and MIT.

Albrecht Schmidt actively started publishing at CHI in 2007. After getting his Ph.D. from Lancaster University, Schmidt was the head of the Embedded Interaction research group at LMU Munich. From 2006 to 2007 he held a shared position at the University of Bonn and the Fraunhofer Institute for Intelligent Analysis and Information Systems (IAIS). In 2007, Schmidt took over a professorship at the University of

Duisburg-Essen. Before moving to LMU Munich, where he chairs the Human-Centered Ubiquitous Media group, he headed a group at the University of Stuttgart. He has had a significant impact on the German HCI research landscape, with his main publication outlets being CHI, MobileHCI, and UbiComp, as well as helping establish the AutomotiveUI conference series. Since 2018, Schmidt has been part of the SIGCHI Academy for his work on context-awareness and situated computing.

After finishing his Ph.D., Volker Wulf held multiple visiting professorships, including at the University of Hamburg and the University of Freiburg. He then went abroad for a research stay at MIT. Since 2004, he has held the chair of Information Systems and New Media at the University of Siegen. Also, he is director of the School of Media and Information (iSchool) at the University of Siegen and heads a research group at Fraunhofer FIT in Sankt Augustin. Wulf established the largest community of professors in Germany that are active at CHI in Siegen. In addition, he significantly influenced the European CSCW research landscape. He became part of the SIGCHI Academy in 2018 for his work conceptualizing a practice-based perspective to computer science and HCI.

Jan Borchers at RWTH Aachen

University also stood out on our list. Looking at the number of published full papers at CHI, Borchers's long-term scientific impact in the past decade is comparable to that of the other leading researchers in the German SIGCHI community such as Schmidt and Baudisch. Borchers could be considered one of Germany's CHI pioneers, as he was one of the first German professors regularly publishing at CHI, contributing regularly from 2003 onward (his first paper was in 1997), for nearly two decades. After returning from a faculty position in Stanford, Borchers established the Media Informatics HCI research group at RWTH Aachen. Borchers' example shows that the German CHI community has been driven by "returnees" rather than developing homogeneously from different research streams (e.g., from engineering psychology, or AI).

In summary, HCI research in Germany developed rapidly between 2010 and 2020. Due to returnees from abroad, there was a push in the field around 2010, and many research groups have published an increasing amount of their research at CHI, the leading conference. Still, HCI research in Germany is quite engineering driven and mostly situated in computer science, also having different, unconnected thematic clusters throughout the country.

CONCLUSION AND OUTLOOK

The aim of this article was to discuss the evolution of the German research groups in the past decade that publish at (co-)sponsored SIGCHI conferences. We provided a quantitative overview of the research groups and professorships active at the leading HCI conference and described the role of five key figures in Germany. The German HCI community is quite small, not very diverse, and mainly situated in computer science. It was largely built up and shaped by international returnees and is technical in nature. In general, it appears to be difficult for non-German scientists to gain a permanent foothold in the German academic system. The German CHI community has a lot of potential to become more diverse and to anchor itself better in Germany's existing structures. The low proportion of women who regularly publish at CHI

shows that there are still very strong barriers to gaining a foothold there. Table 1 (http://interactions.acm.org/uploads/CHI_in_Germany.xlsx) can also be used to examine in which other areas German HCI groups are actively publishing.

Similar attempts to capture the German HCI landscape exist. For example, Jan Borchers maintains a list of German groups actively publishing at CHI in the past 15 years (<https://hci.rwth-aachen.de/chi-ranking>). Many other groups are also working on HCI research topics in Germany and presenting at other conferences (nevertheless, there is a strong correlation between conferences such as CHI, IUI, and UIST, among others). We limited our view to those active at CHI and other SIGCHI conferences, as we think that this conference is the focal point for groundbreaking findings within the HCI research field. Many other conferences also produce new and valuable results, but CHI is often the focal point for many of these developments within HCI.

Nevertheless, there are other large areas of human-centered computing research in Germany, most notably visualization research with its main conference IEEE VIS, but also the large local conference series "Mensch und Computer." In addition, other perspectives could reveal interesting insights into the German HCI community by, for example, looking at curriculum development, funded projects, or ERC research awards. Last but not least, it is of course the many bright Ph.D. students and postdocs who produce the research contributions and on whose shoulders the system rests.

We believe that in the next decade, the German HCI research community needs to strive to become more inclusive in all dimensions. Engaging more with existing subfields of computer science (e.g., AI, software engineering) while embracing the interdisciplinary nature of HCI could help stimulate and enrich the field. For instance, tandem professorships in other disciplines beyond computer science (e.g., design, health, media science, sociology) could help amplify the impact of the field as a whole. It could be useful for many computer science departments to hire professors who have a multidisciplinary

background, with prior degrees outside of computing.

We want to repeat this exercise in 2030 to get evidence on how the field is evolving and also dissolving into other disciplines. In addition, we will post a comment to this article in 2022 to discuss trends and streams that we might not have captured here, and invite our colleagues to send us notes and comments on this article.

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ENDNOTES

1. Sturm, C. et al. How WEIRD is HCI? Extending HCI principles to other countries and cultures. *Proc. of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems*. ACM, New York, 2015.
2. Himmelsbach, J. et al. Do we care about diversity in human-computer interaction: A comprehensive content analysis on diversity dimensions in research. *Proc. of the 2019 CHI Conference on Human Factors in Computing Systems*. ACM, New York, 2019.
3. CHI is the top conference in HCI and one of the leading conferences in computer science According to Google Scholar it has an h-5 index average of 95 and an h-5 index median of 122, and, as of January 2020, is listed in the top 10 computer science conferences by <https://www.guide2research.com>. CHI is an annual research conference with around 3,000 international participants (<https://chi.acm.org>) hosted by SIGCHI. In addition to CHI, the SIGCHI community (co-) sponsors about 24 conferences on topics such as intelligent user interfaces, automotive user interfaces, and mobile human-computer interaction.
4. <https://www.wissenschaftsrat.de/download/2020/8675-20.html>
5. <http://www.vs.inf.ethz.ch/publ/papers/bibliometro.pdf>

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