

Mobilizing Research and Regulatory Action on Dark Patterns and Deceptive Design Practices

Colin M. Gray
comgray@iu.edu
Indiana University
Bloomington, Indiana, USA

Johanna Gunawan
gunawan.jo@northeastern.edu
Northeastern University
Boston, Massachusetts, USA

René Schäfer
rschaefer@cs.rwth-aachen.de
RWTH Aachen University
Aachen, Germany

Nataliia Bielova
nataliia.bielova@inria.fr
Inria Centre at Université Côte d'Azur
France

Lorena Sánchez Chamorro
lorena.sanchezchamorro@uni.lu
University of Luxembourg
Esch-sur-Alzette, Luxembourg

Katie Seaborn
seaborn.k.aa@m.titech.ac.jp
Tokyo Institute of Technology
Tokyo, Japan

Thomas Mildner
mildner@uni-bremen.de
University of Bremen
Germany

Hauke Sandhaus
hauke.sandhaus@web.de
Cornell Tech University
New York, New York, USA

ABSTRACT

Deceptive, manipulative, and coercive practices are deeply embedded in our digital experiences, impacting our ability to make informed choices and undermining our agency and autonomy. These design practices—collectively known as “dark patterns” or “deceptive patterns”—are increasingly under legal scrutiny and sanctions, largely due to the efforts of human-computer interaction scholars that have conducted pioneering research relating to dark patterns types, definitions, and harms. In this workshop, we continue building this scholarly community with a focus on organizing for action. Our aims include: (i) building capacity around specific research questions relating to methodologies for detection; (ii) characterization of harms; and (iii) creating effective countermeasures. Through the outcomes of the workshop, we will connect our scholarship to the legal, design, and regulatory communities to inform further legislative and legal action.

KEYWORDS

dark patterns, deceptive design, manipulative user interfaces, ethics, regulation

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1 INTRODUCTION

Reports from regulators and social scientists have unequivocally shown that a substantial number of digital systems are designed to deceive and coerce users into doing things they would otherwise not do [11, 40, 41]. According to a 2022 EU Commission report [30], “97% of the most popular websites and apps used by EU consumers deployed at least one dark pattern.” This echoes the work of human-computer interaction (HCI) scholars that have previously shown that dark patterns have penetrated numerous parts of our digital experiences across websites (e.g., e-commerce [31, 39], consent [21, 25], browser modalities [23], travel [27]), (mobile) applications (e.g., gaming [12, 50], social media [36, 38, 47]), and other technologies (e.g., conversational/voice user interfaces [42], augmented/virtual reality [10, 49], IoT [28]).

In the past five years, the HCI research community has been central to the study of dark patterns¹—contributing key knowledge regarding the forms that these patterns take [16]; the definitions of dark patterns and their characteristics [33]; the ways in which dark patterns produce harms [25]; the presence of dark patterns in digital interfaces [7, 9, 32]; the global spread of such patterns, from Brazil [2] to India [8] to Japan [26]; and the impact of these patterns on users of digital systems [5, 6, 13]. We are now entering a phase characterized by the application of research findings to the real world—including in terms of influencing and informing changes in practice and regulations.

2 MOTIVATION

The first workshop on dark patterns was held at CHI in 2021 [29] with over 30 participants that pursued a wide range of studies related to the topic. This workshop was incredibly effective at building connections among scholars in this emerging area—and

¹We use this term to connect our efforts to prior scholarship and legal statute, recognizing that other terms, notably “deceptive design” or “manipulative user interface design,” are also used but do not yet encapsulate the broad remit of practices or concepts from academic or regulatory perspectives. We acknowledge that the ACM Diversity and Inclusion Council now includes the term “dark patterns” on a list of problematic terms (<https://www.acm.org/diversity-inclusion/words-matter>).

many of the position papers shared at that inaugural workshop have gone on to form a transdisciplinary core for current and future dark patterns scholarship. A subset of the workshop organizers also recently led a SIG at CHI in 2023 [22] which garnered participation from over 100 researchers online and in person, and we plan to extend our key SIG aims to inform this workshop and build on the energy of those who participated.

Efforts to combat dark patterns are increasingly transdisciplinary, with a core of HCI scholarship and reports from numerous regulatory bodies being used to support new legislation to protect users and legal sanctions against companies that have used dark patterns to undermine user choice and agency. To foster further development of this community while proposing additional, transdisciplinary initiatives that can support social impact, our key objectives are as follows:

- (1) **Consolidating methodologies to prove the existence of dark patterns:** Describing metrics to inspect and characterize dark patterns at multiple levels, including the UI, the user journey, and the system. Indicating how dark patterns knowledge that supports this inspection process can be aligned across communities and regularly refreshed in response to new legislation and empirical work. Identifying synergies from a different range of domains and methodologies that complement each other in the identification of dark patterns and their effects.
- (2) **Characterizing harms of dark patterns in specific contexts and user groups:** Identifying differential impacts of dark patterns based on particular cognitive or social biases, including the role of different forms of vulnerability on susceptibility to dark patterns.
- (3) **Describing counter-measures to improve informed decision-making:** Counter-measures assist users in reflecting on their choices before and while engaging with digital interfaces, with the aim of limiting harmful consequences to the greatest degree possible. These interventions may increase the awareness of users by sensitizing or educating them or by confronting or diminishing the impact of dark patterns, either through “undeceptive” or “fair” patterns or through other counter-measures.

3 ORGANIZERS

The organizers have researched dark patterns across a range of different domains and have contributed to building a research community that increasingly includes members of the regulatory, legal, and design communities. We have a track record of running successful workshops (e.g., EduCHI at CHI 2023 [17], the “Dark Side” of Multi-Modal Social Agents at CUI 2023 [1], “What Can CHI Do About Dark Patterns?” at CHI 2021 [29]) and are well-connected with the growing international research community supporting dark patterns research and engagement efforts. The organizing team includes mid-career and early-career scholars alongside doctoral researchers who have actively contributed to dark patterns scholarship. **Colin M. Gray** will serve as Lead Facilitator for the workshop; **René Schäfer** and **Johanna Gunawan** will serve as Co-Facilitators; **Nataliia Bielova** and **Lorena Sánchez** will serve as Papers Chairs; **Katie Seaborn** and **Thomas Mildner** will serve

as Online Coordinators; and **Hauke Sandhaus** will serve as Communications Chair.

Colin M. Gray is an Associate Professor at Indiana University, where they serve as program director for a graduate program in HCI/d. Their research has contributed foundational knowledge on dark patterns [16], including a unified ontology [19, 20]; connections between design, law, and HCI [21]; and articulation of challenges in supporting ethical design practices [14, 15]. They will serve as the lead facilitator for the workshop.

Johanna Gunawan is a PhD candidate at Northeastern University. Her interdisciplinary work spans cybersecurity, HCI, and law, with a current focus on understanding dark patterns in emerging technologies [23, 28, 42] and policy considerations for improving consumer protections against dark patterns and similar designs [24, 25]. She will serve as a co-facilitator for the workshop.

René Schäfer is a PhD candidate at the RWTH Aachen University in Germany. His research focuses on mental models, legislation, and technical countermeasures to help people deal with malicious and deceptive designs. His most recent work investigated visual countermeasures against dark patterns [46]. He will serve as a co-facilitator for the workshop.

Lorena Sánchez is a PhD candidate at the University of Luxembourg. Her research focuses on the intersection of manipulative designs and vulnerable populations and how we can design to protect users and increase their resilience. She aims to create multidisciplinary solutions to tackle vulnerability towards manipulative designs with a social perspective. She will serve as papers co-chair for the workshop.

Nataliia Bielova is a Tenured Research Scientist at the French National Institute for Research in Digital Science and Technology, Inria, since 2013. Nataliia worked for the French Data Protection Authority (CNIL) in 2021-2022. Her transdisciplinary research focuses on building knowledge on dark patterns, such as joint work with Colin M. Gray and Thomas Mildner on a unified ontology [19, 20] and connections between design, law, and HCI [21]. She works on legal and technical analysis of dark patterns in consent banners [4, 34, 45, 48] and on the impact of consent design on the outcome of users’ consent decisions [3]. She will serve as papers co-chair for the workshop.

Thomas Mildner is a PhD candidate at the University of Bremen, Germany. With a specific focus on dark patterns in social media [36, 38], Thomas’ research concerns (un-)ethical design in digital interfaces [35, 37]. His work considers methods to analyse dark patterns and the development of countermeasures to support autonomous decision-making. He will serve as an online coordinator for the workshop.

Katie Seaborn is an Associate Professor at Tokyo Institute of Technology. A key research theme in their lab is *Interactions in the Negaverse*, a critical trajectory of scholarship that explores how

technology exploits, affords, or even celebrates negative experiences. Their team discovered known and novel dark patterns in Japanese apps [26]. She will serve as an online coordinator for the workshop. Read her position statement on CHI '24 in Hawai'i².

Hauke Sandhaus is a PhD student at Cornell University where he is studying the design of ethical technology by incorporating policy-making in the process. He is currently collecting examples of industries' use of bright patterns [43, 44] and will serve as communications (co)-chair for the workshop.

4 WORKSHOP PROCEEDINGS AND WEBSITE

The website for the workshop will feature a call for participation, a collection of recent work produced by the dark patterns research community, a proposed workshop schedule, and the final position papers submitted by participants. The website URL will be chi2024.darkpatternsresearchandimpact.com. All accepted position papers will be published on the *CEUR Workshop Proceedings*³ site.

5 WORKSHOP STRUCTURE

The workshop will be a one-day hybrid event, with opportunities for synchronous and asynchronous participation. It will be simulcast via Zoom (or a similar video conferencing platform) to enable remote participation. We will also utilize channels in a pre-existing *Dark Patterns Research and Impact* Slack workspace⁴ to facilitate discussion in the pre-workshop planning, during the workshop, and as an ongoing venue for networking and organization of research impact. The main workshop event will include opportunities for live presentations and breakout discussions, but we will also allow for position paper presentations to be delivered via recording and for asynchronous participants to propose discussion points that will be considered by synchronous participants. In addition, using the Slack workspace and Google Docs, we will also create “living” documents that can be accessed and contributed to by participants before, during, and after the live workshop—engaging asynchronous and synchronous participants alike.

5.1 Pre-Workshop

We will advertise the workshop through HCI mailing lists, social media, and by direct invitation. We will also leverage a Slack community with over 100 members that emerged from the 2021 CHI workshop on dark patterns, inviting members to participate or otherwise contribute to ideas we will consider at the workshop. Additionally, we will email the authors of all dark patterns-related papers identified in a recent systematic review [18] and will also reach out to practitioners, regulators, and legal scholars that have contributed to work on dark patterns. Our goal will be to engage approximately 30–40 participants with differing disciplinary perspectives and types of engagement with dark patterns, including not only HCI, CS, and privacy scholars but also practitioners, regulators, and legal scholars working on issues relating to digital manipulation and deception. We will solicit participation in two

different forms: 1) *position paper* attendees, for scholars or other stakeholders already engaged in research or regulatory work on dark patterns; and 2) *general attendees*, for interested participants who want to learn more about this community or opportunities for action.

Position Paper Track. Workshop applicants will be asked to submit a 5–9 page position paper, presenting findings from their own work or new arguments related to dark patterns. These position papers can include findings from in-progress research on dark patterns, their impacts, or counter-measure interventions. Position papers may also focus on translation of dark patterns concepts or issues across disciplinary boundaries, including arguments that enable or describe legal or regulatory action. Acceptance will be based on quality and relevance to the aims of the workshop, prioritizing a diversity of disciplinary perspectives, types of outcomes or potential impacts, and geographic locations. Each submission will be independently evaluated by a minimum of two organizers, with a robust and supportive process led by the papers co-chairs. Upon acceptance, all participants will be invited to register for the workshop and identify whether they will join in an asynchronous or synchronous capacity.

General Attendee Track. An alternate ‘non-presenting track’ will be available to those who wish to attend to learn or otherwise engage with the dark patterns community but do not have findings or arguments to fill 5–9 pages. They will be asked to submit a statement of 1–2 pages articulating their interest in dark patterns and what they hope to gain or achieve by attending this workshop. These participants will not be invited to present nor will the interest statements be published on our website; however, these participants will still be asked to participate in lightning introductions and through asynchronous or synchronous workshop activities. Acceptance for non-presenting attendees will similarly prioritize diversity for the same characteristics as position paper track attendees. This track lowers the barrier of entry for workshop participation, and is intended to encourage and welcome junior scholars new to dark patterns scholarship, as well as attendees from different areas in HCI and beyond for open and collaborative community-building.

5.2 Workshop Schedule

In Table 1, we provide the workshop agenda. We have focused the structure on our three core objectives while providing ample time for discussion among participants working in different areas of dark patterns scholarship or regulation. Throughout the day, we will contribute to an ongoing set of living documents (Google Docs) and Slack conversations that can be leveraged to support and sustain future action.

We will begin with lightning introductions, allowing all participants to share how they connect with the topic of dark patterns and impact. Attendees with accepted position papers will be asked to briefly discuss their submission in their introduction. We will then engage participants—both online and on-site attendees—in three 90-minute sessions throughout the day, each one focused on one of the three specific objectives. In each session, we will curate a set of invited presentations based on our review of the position papers that participants have submitted. The goal will

²<https://bit.ly/chi24statement>

³<https://ceur-ws.org>

⁴<https://darkpatternsresearch.slack.com>

Table 1: Workshop schedule

Time	Activity	Description
9:00	Welcome	Organizer introductions and workshop structure.
9:30	Lightning introductions	Participants introduce themselves with their position papers in one presentation slide. If multiple participants authored the same position paper, one person will introduce themselves and their co-authors. Position paper introductions will be followed by shorter, verbal general attendee introductions (the names of general attendees and affiliations will be displayed on a separate slide).
10:30	<i>Coffee break</i>	
11:00	Session 1	Methodologies to detect dark patterns. Short paper presentations followed by breakout discussions organized by different detection approaches or analyst type.
12:30	<i>Lunch break</i>	
14:00	Session 2	Characterizing dark patterns harms. Short paper presentations followed by breakout discussions organized by contexts and user groups that might experience outsized harms.
15:30	<i>Coffee break</i>	
16:00	Session 3	Identifying opportunities for counter-measures. Short paper presentations followed by breakout discussions organized by types of counter-measures and specific pattern types they address.
17:30	Debrief	Discussion of opportunities for action and next steps for community-building and scholarship.
18:00	End of the workshop	Optional drinks and socializing event

be to highlight diversity (e.g., nationality, discipline, area of focus, role) in relation to each objective, stimulating conversation and translational opportunities among participants.

Each 90-minute session will begin with 30 minutes of short presentations and Q&A, followed by 45 minutes in breakout rooms (via Zoom and in person) to further discuss the implications of these presentations in more specific contexts. These discussions will be scribed in a shared Google Doc and will culminate in a synthesis discussion across the breakouts in the final 15 minutes of the session, with a focus on inspiring action and translation across disciplines and/or roles. Finally, we will engage in a debrief to complete the workshop, discussing the key takeaways of the three main sessions and identifying practical areas for future collaboration or other impact-generating activities.

5.3 Hybrid Plans for Engagement

As indicated in the workshop schedule, all activities will provide engagement opportunities for both asynchronous and synchronous participation. All position papers will be published on the *CEUR Workshop Proceedings*⁵ site at least two weeks prior to the workshop to encourage cross-pollination of ideas prior to the event.

In the week prior to the workshop, all registered participants will be added to a Slack channel to encourage conversation and communication about workshop goals. We will provide multiple points of engagement before, during and after the workshop:

- We will create a Google Doc for each session that includes links to relevant position papers and key items for conversation. Before the workshop, participants can add items for

discussion, provide links to relevant resources, or raise questions. During the workshop, a designated note-taker will track questions asked and capture discussions in the breakout rooms. A summarized version of these discussions will be captured in a semi-archival version of the Google Doc which will be published on the website after the workshop.

- During the synchronous workshop session we will use a discussion format piloted during our hybrid SIG at CHI'23 [22] in which discussion session leaders (located in-person and online) will make use of videoconferencing tools to unite in-person attendees with remote attendees. During the workshop, attendees and organizers will additionally make use of break-out Slack channels to communicate across the hybrid format.
- Participants unable to join synchronously for the workshop will be able to contribute to the Google Docs and Slack channel conversations before and after the workshop, and will also be prompted to record their lightning introduction and position paper presentation (where applicable).

As indicated, we will use Slack and collaborative Google documents to facilitate near-live engagement. Should technical synchronization or accessibility issues arise, the organizers will use Slack to circulate alternative videoconferencing links or other guidance to enable full participation by all registered workshop attendees.

5.4 Post-Workshop Plans

We will focus our post-workshop engagement efforts on creating and sustaining translational communication opportunities with legal scholars, practitioners, and regulators. We will continue to build the Slack workspace, expanding membership and identifying means

⁵<https://ceur-ws.org>

of connecting community members interested in combatting dark patterns. To disseminate the results of the workshop and opportunities for transdisciplinary action, the organizers will write and publish a short article in *Interactions* magazine that includes specific modes of engagement across disciplinary boundaries important in confronting the impacts of dark patterns.

In the final workshop session, we will also debrief and discuss further mechanisms to encourage robust communication among HCI scholars, social scientists broadly construed, and members of the legal and regulatory community. In particular, we will consider opportunities to proactively support each others' aims to ensure that scholarship supports legal and regulatory action, including contributions to rulemaking procedures in the US, EU, India, and other areas of the world where dark patterns are currently being regulated.

6 CALL FOR PARTICIPATION

This one-day hybrid workshop will bring together a transdisciplinary group of researchers, practitioners, legal scholars, and regulators to discuss opportunities to address dark patterns across different domains and from different disciplinary perspectives. We will identify opportunities to strengthen and build upon scholarship relating to dark patterns methodologies, characterization of harms, and counter-measures to reduce the impact of dark patterns. We will also seek to build translational capacity to connect scholarship, legal jurisprudence, and regulation of dark patterns—informing our theme of “organizing for action.” Participants can submit either a *position paper* or *statement of interest* to the workshop website (chi2024.darkpatternsresearchandimpact.com) in the single-column *ACM Conference Proceedings Primary Article*⁶. Acceptance will be based on quality, relevance, and diversity. Only position papers will be published through the *CEUR Workshop Proceedings*⁷ site. At least one author of each paper or statement must attend both the workshop and at least one day of the main conference.

Call for Position Papers. Applicants may submit a 5–9 page position paper (excluding references). These position papers can include findings from in-progress research on dark patterns, their impacts, or counter-measure interventions. Position papers may also focus on translation of dark patterns concepts or issues across disciplinary boundaries, including arguments that enable legal or describe regulatory action.

Call for General Attendees. Applicants may submit a 1–2 page statement without an abstract, detailing their interest in participating in the workshop and what they hope to gain from attendance.

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⁶<https://chi2024.acm.org/submission-guides/chi-publication-formats/>

⁷<https://ceur-ws.org>

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