1. Cracking the Privacy Paradox: Towards a Realistic Privacy Behavior Scale (PrBeS) - [Masters]

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Despite a growing number of individuals expressing heightened concerns about their privacy amid negative publicity regarding privacy breaches, they paradoxically continue to disclose more information than ever before [1]. This discrepancy between privacy concern (an attitude) and information disclosure (a behavior) is well known among privacy researchers and often referred to as the "**privacy paradox**" [2,3]. However, assessing privacy attitude is usually done relying on some existing privacy scales (e.g., Westin's privacy index [4], Privacy Behavior Scale (PBS) [5], Internet Users' Information Privacy Concerns (IUIPC) Scale [6], Privacy Concerns Scale (PCS) [7], and Online Privacy Concerns Scale (OPCS) [8]), which might be subject to some construct bias, they are not measuring what is supposed to measure. More specifically, these scales provide valuable insights into individuals' attitudes and actions regarding the protection of their personal information, yet they seem to fail to accurately measure individuals' privacy attitudes. This thesis aims to tackle this problem by investigating existing privacy behavior scales/indexes, identifying their strengths and weaknesses, and proposing a novel privacy behavior scale (PrBeS). The scale will be evaluated by privacy experts and by an experiment with potential end users.

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2. Developing, Testing, and Validating Design Principles for Responsible Privacy Heuristic - [Masters]

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In response to the excessive collection and misuse of Personal Information (PI), many privacy regulations that govern such collection and use have been enacted [1]. Consequently, privacy compliance has become a main concern for companies dealing with PI as failing to comply with these regulations results in huge fines [2]. These regulations rely heavily on the concept of informational self-determination [3]. Accordingly, companies are required to provide privacy protection mechanisms and inform data subjects (DSs) how their PI will be processed, leaving the burden of understanding relevant information and the use of protection mechanisms on the side of DSs. However, a considerable number of studies have demonstrated that most of these mechanisms fail to safeguard users because users do not understand how to use them properly [4]. **This problem could be solved if the solution is designed with respect to the**

DS's capability for making informed decisions. However, it is not always easy to design a system that fits the needs of DSs with different experiences. A potential solution is the use of heuristics that can be defined as mental shortcuts or rules of thumb, which can be employed to decrease the cognitive burden and speed up the process of decision-making [5,6]. Specifically, privacy heuristics can be used to assist users in making informed decisions and acting accordingly. However, privacy heuristics are complex to design, and they are subject to bias [6], i.e., they may influence the DS judgments or decisions in a manner that is considered unethical, immoral, or socially responsible. This thesis aims to tackle this problem by developing, testing, and validating design principles for responsible privacy heuristic.

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3. Citizens as Data Donors (CaDD) - a method for maximizing participation through privacy assurance and behavioral change - [Masters]

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Citizens Science (CS) is a research technique that enlists the public in gathering data. Although citizens themselves can be the source of such data, most of their participation in CS so far focused on furnishing data concerning almost everything except themselves. In particular, citizens can participate as data donors (CaDD), where they allow professionals to collect and/or have access to their Personal Data (PD) for the purposes of the public good. However, PD cannot be used without citizens' consent, therefore, citizens need to be well-motivated to participate as PD donors.

This thesis aims at proposing and validating a method for maximizing citizens' participation as data donors by understanding and addressing their privacy requirements taking into consideration the perceived benefits and ease of the donation behavior. The method will be based on the Theory of Planned Behavior (TPB) [1], which has been proven to be a useful tool in explaining, predicting and changing many human behaviors. Moreover, the TPB was a foundation for the Technology Acceptance Model (TAM) [2] that models how individuals come to accept and use a certain new technology.

Note: If you want to have a look at a preliminary version of this work including the types of techniques to be used for developing the method, please check this paper [3].

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4. An Approach for Designing Accessible Web Application Compliant with WCAG Standards - [Bachelor]

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Web accessibility refers to making web applications usable for people with disabilities, ensuring equal access to information and functionality. The Web Content Accessibility Guidelines (WCAG), developed by the World Wide Web Consortium (W3C), provide a set of standards for developers to follow to create accessible content. These guidelines focus on making web applications perceivable (i.e., users must be able to perceive all relevant UI components), operable (i.e., users must be able to navigate and correctly interact with the application), understandable (i.e., users must be able to read and comprehend the content), and robust (i.e., the content must work reliably across various technologies and assistive devices) for all users, including those with visual, auditory, and cognitive impairments. The main aim of this thesis is to offer an approach for designing Web Applications compliant with the WCAG standards by answering the following Research Questions (RQ):

RQ1. What are the common accessibility barriers in modern web applications?
RQ2. What are the best practices, tools, and frameworks that can assist developers in implementing accessibility features?

After answering these RQs, an approach will be constructed considering common accessibility barriers and how they can be tackled using the identified best practices, tools, and frameworks.

5. The Role of AI in Enhancing User Personalization in Web Applications - [Bachelor]

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Personalization in web applications refers to tailoring the user experience to meet individual preferences, needs, and behaviors. With the rise of artificial intelligence (AI), personalization has moved from basic customization to complex data-driven experiences. AI can analyze vast amounts of data, learn from user behavior, and make real-time adjustments, providing users with relevant content, recommendations, and interactions. This thesis will explore the role of AI in enhancing user personalization in web applications, focusing on techniques, models, and frameworks used to create personalized user experiences (UX). Specifically, this thesis will aim to answer the following Research Questions (RQ):

RQ1. How does AI enable more advanced personalization compared to traditional methods?
RQ2. What AI techniques are most effective for personalizing web applications?
RQ3. What are the challenges and limitations of using AI for personalization?