

Bachelorarbeiten

Vergabeverfahren und Themen

Lehrstuhl für Electronic Commerce
Prof. Dr. Bernd Skiera

Wintersemester 2023/2024

Allgemeine Hinweise

Allgemeine Hinweise zu den Voraussetzungen zur Bearbeitung von Bachelorarbeiten finden Sie unter:

<http://www.wiwi.uni-frankfurt.de/studium/studierende/pruefungsorganisation/allgemeine-informationen/bachelorarbeit.html>

Bitte beachten Sie: Es findet keine Vergabe von Abschlussarbeitsplätzen außerhalb des zentralen QIS-Vergabeverfahrens statt!

Fristen

Aktuelle Fristen finden Sie unter:

<http://www.wiwi.uni-frankfurt.de/studium/studierende/pruefungsorganisation/pruefungen/fristen.html>

Bearbeitungshinweise

Hinweise zum Bearbeiten von Bachelorarbeiten sowie eine Musterdatei des Marketing Schwerpunkts finden Sie unter:

<http://www.marketing.uni-frankfurt.de/studium/anleitung-zum-wissenschaftlichen-arbeiten.html>

Bewertungsvorlage

Ein erster Anhaltspunkt für die Benotung der Bachelorarbeiten ergibt sich aus folgendem Bewertungsschlüssel:

https://www.marketing.uni-frankfurt.de/fileadmin/user_upload/dateien_abteilungen/abt_marketing/Dokumente/Bachelorarbeiten/Gutachten-Bachelorarbeit_Lehrstuhl_Skiera.pdf

Kontakt bei Fragen zur Vergabe der Bachelorarbeiten

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1. Schritt: QIS Anmeldung

Melden Sie sich fristgerecht über das QIS-System für einen Bachelorarbeitsplatz an. Wählen Sie hier als Betreuer Prof. Dr. Bernd Skiera aus.

2. Schritt: Themenvergabe

Wenige Tage nach Anmeldeschluss erhalten wir vom Prüfungsamt die Liste aller erfolgreichen Anmeldungen. Wir werden Sie nun unter Ihrer Studenten-Email-Adresse (@stud.uni-frankfurt.de) kontaktieren um die Vergabe der Themen zu koordinieren. Per E-Mail werden wir Ihnen das genaue Vorgehen zur Vergabe der Themen detailliert erläutern. Die Details zur Vergabe der Themen finden Sie auch auf der nächsten Folie.

3. Schritt: Termin mit Betreuer

Vereinbaren Sie, zügig nachdem Ihnen Ihr Bachelorarbeitsthema mitgeteilt wurde, einen Termin mit Ihrem Betreuer.

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Es gibt zwei Möglichkeiten für die Findung eines Bachelorarbeitsthemas:

1. Sie wählen ein vom Lehrstuhl vorgeschlagenes Bachelorarbeitsthema („Normalfall“)

Bitte treffen Sie in jedem Fall (auch wenn Sie ein eigenes Thema für Ihre Bachelorarbeit vorschlagen möchten) unter den nachfolgend ausgeschriebenen Themen ein Ranking Ihrer 5 Wunschthemen. Sie bekommen von uns, sofern möglich, ein Thema gemäß Ihrer Themenpräferenzen zugeteilt.

2. Sie schlagen ein eigenes Thema für Ihre Bachelorarbeit vor

Wenn Sie ein eigenes Thema bearbeiten möchten, schicken Sie uns eine Datei in der Sie kurz Ihren Themenvorschlag vorstellen. Erklären Sie auf dort (1) welches Problem Sie lösen möchten, (2) warum Ihr Problem interessant ist und (3) wie Sie das Problem lösen möchten (z.B. welche Daten Sie verwenden wollen). Ein guter Grund für die Verwendung eines eigenen Themas ist beispielsweise eine empirisch ausgerichtete Arbeit, die auf Daten aufbaut, die Ihnen zur Verfügung stehen. Wir sind grundsätzlich auch bereit Bachelorarbeiten zu betreuen, welche zum Ziel haben, die im Rahmen von Datamining-Wettbewerben ausgeschriebenen Problemstellungen zu lösen (Beispiel <https://www.kaggle.com/c/avazu-ctr-prediction>).

Ihren Themenvorschlag werde wir am Lehrstuhl diskutieren. Wenn wir Ihr vorgeschlagenes Thema für geeignet halten, können Sie es bearbeiten. Sollten wir Ihr vorgeschlagenes Thema für ungeeignet halten, bearbeiten Sie das Ihnen vom Lehrstuhl zugeteilte Thema.

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In ihrem Studium haben Sie in einer ganzen Reihe an Veranstaltungen Kenntnisse erhalten, die Ihnen das empirische Arbeiten ermöglichen.

Professor Skiera selbst unterrichtet seit vielen Jahren die Veranstaltung PMAR („Marketing Analytics“), die eine Pflichtveranstaltung für die Wahl des Schwerpunkts Management ist. In dieser Veranstaltung haben Sie das Arbeiten mit der Software R/RStudio sowie das Anwenden von Verfahren wie der linearen und der logistischen Regressionsanalyse kennengelernt. Wir erwarten, dass Sie über derartige Kenntnisse verfügen, wobei Sie auch gerne andere Software, z.B. Python oder Stata, einsetzen können.

Ohne ein gewisses empirisches Toolkit, wird Ihnen die Bearbeitung der meisten Themen schwer fallen.

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Ausgeschriebene Themen

Generative AI for Personalized Student Feedback: Developing and Testing a Quiz Prototype

Overview

Generative AI products, such as ChatGPT, Midjourney, LLaMA, and Langchain, have quickly transformed many tasks, from coding to writing to image generation. Especially higher education has to rethink traditional tests due to the new technology. While much of this discussion focuses on challenges, this thesis should implement and test a promising application of Generative AI for marketing education: personalized student feedback. In our Bachelor's class "Marketing Analytics" (PMAR), we implemented an online quiz that tests students' comprehension of class material. However, this quiz is a simple multiple-choice test with limited opportunity for feedback. This thesis should use the existing quiz material and build an interactive web quiz application that uses a Generative AI API (e.g., GPT-4) and provides personalized feedback based on the student's answer. The thesis should then empirically test the accuracy and usefulness of those answers to gauge how promising generative AI is for personalized learning. If successful, we aim to implement the prototype in-class.

Requirements

- Successfully attended our Marketing Analytics course (PMAR/BOEM)
- Interest in Generative AI and API interfaces (no experience necessary, but willingness to learn)
- Programming skills in R and basic econometric knowledge

Language

English (preferred and recommended) / German

Literature

OpenAI (2023), "GPT-4," (accessed August 30, 2023), [available at <https://platform.openai.com/docs/models/gpt-4>].

Peres, Renana, Martin Schreier, David Schweidel, and Alina Sorescu (2023), "On ChatGPT and Beyond: How Generative Artificial Intelligence May Affect Research, Teaching, and Practice," *International Journal of Research in Marketing*, 40 (2), 269–75.

Wickham, Hadley (2021), "Mastering Shiny," O'Reilly Media, Inc., (accessed August 30, 2023), [available at <https://mastering-shiny.org>].

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How Well Can Large Language Models Solve Code-Based Marketing Analytics Exams?

Overview

Generative AI products, such as ChatGPT, Midjourney, LLaMA, and Langchain, have quickly transformed many tasks, from coding to writing to image generation. Especially higher education has to rethink traditional tests due to the new technology. One such example is the ability of Large Language Models to solve complex questions requiring advanced logical reasoning. Especially with the recent addition of ChatGPT's code interpreter, the Large Language Model is now capable of writing code, executing code, interpreting output, and thereby answering complex (exam) questions. This thesis aims to empirically investigate how well such Large Language Models can solve exam questions requiring coding tasks. We will provide several past exams from our Marketing Analytics class, including its solutions. The thesis can then systematically test how well different types of Large Language Models perform on this exam and discuss their implications for higher education.

Requirements

- Successfully attended our Marketing Analytics course (PMAR/BOEM)
- Interest in Generative AI
- Programming skills in a statistical language such as R (preferred), Python, Stata

Language

English (preferred and recommended) / German

Literature

OpenAI (2023), "GPT-4 Technical Report," arXiv (March 27), <https://arxiv.org/abs/2303.08774>.
Peres, Renana, Martin Schreier, David Schweidel, and Alina Sorescu (2023), "On ChatGPT and Beyond: How Generative Artificial Intelligence may Affect Research, Teaching, and Practice," *International Journal of Research in Marketing*, 40 (2), 269–75.

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Search Engine Visibility on the Amazon Marketplace

Overview

The Amazon Marketplace is one of the largest electronic commerce marketplaces. Consumers often use Amazon's built-in search engine to identify appropriate products for purchase, where they see a mixture of organic (i.e., non-paid) and sponsored search results (i.e., advertisement). Previous literature has identified a strong relationship of search engine rankings and business success (e.g., Drèze and Zufryden 2004; Ghose and Yang 2009; Agarwal, Hosanagar, and Smith 2011; Narayanan and Kalyanam 2015). However, the literature currently lacks evidence on the Amazon Marketplace. This thesis builds on existing literature from other settings and investigates the relationship between search engine visibility and product success on the Amazon marketplace, emphasizing the distinction between organic and sponsored search results. To answer your research question, we will provide an extensive data set of products' historical sponsored and organic visibility, prices, sales ranks, and other product metadata.

Requirements

- Interest in electronic commerce
- Programming skills in a statistical language such as R (preferred), Python, Stata
- Basic econometric knowledge

Language

English (preferred and recommended) / German

Literature

Agarwal, Ashis, Kartik Hosanagar, and Michael D. Smith (2011), "Location, Location, Location: An Analysis of Profitability of Position in Online Advertising Markets," *Journal of Marketing Research*, 48 (6), 1057–73.

Ghose, Anindya and Sha Yang (2009), "An Empirical Analysis of Search Engine Advertising: Sponsored Search in Electronic Markets," *Management Science*, 55 (10), 1605–22.

Jürgensmeier, Lukas and Bernd Skiera (2023), "Measuring Fair Competition on Digital Platforms," SSRN (March 30), <https://dx.doi.org/10.2139/ssrn.4393726>.

Narayanan, Sridhar and Kirthi Kalyanam (2015), "Position Effects in Search Advertising and their Moderators: A Regression Discontinuity Approach," *Marketing Science*, 34 (3), 388–407.

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An Empirical Investigation of Competition Intensity on the Amazon Marketplace

Overview

The Amazon Marketplace is one of the largest electronic commerce marketplaces. Both Amazon and third-party sellers offer products on the Amazon Marketplace. While sellers can reach many consumers on the marketplace, they also face competition from Amazon and other sellers, both through within-product competition (via the buy box) and between-product competition (across competing products).

For individual sellers wanting to compete in the marketplace and for regulators overseeing such platforms, it is critical to understand the degree of competition. How intense is such competition? You will empirically investigate this question with an extensive Amazon data set with historical prices, sales ranks, and product metadata. Specifically, this thesis aims to (1) identify appropriate metrics from the literature or introduce new metrics that quantify competition intensity on the Amazon Marketplace. (2) compute such metric for several categories in the real-world data set, (3) evaluate its validity and relationship to product success, and (4) and suggest how practitioners, researchers, and regulators benefit from those insights.

Requirements

- Interest in electronic commerce
- Programming skills in a statistical language such as R (preferred), Python, Stata
- Basic econometric knowledge

Language

English (preferred and recommended) / German

Literature

Chevalier, Judith and Austan Goolsbee (2003), "Measuring Prices and Price Competition Online: Amazon.com and BarnesandNoble.com," *Quantitative Marketing and Economics*, 1 (2), 203–22.

Henard, David H. and David M. Szymanski (2001), "Why Some New Products are More Successful than Others," *Journal of Marketing Research*, 38 (3), 362–75.

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Do Free Ad-Supported Products Harm Society?

Overview

Free ad-supported products are financed via advertising and enable consumers to access content, services, or software without direct monetary costs. This approach has found popularity among various online platforms, including social media networks, video streaming services, search engines, and news websites. More recently, some companies have extended this business model to expensive physical goods. For example, an American start-up offers a free TV financed entirely by advertising. However, consumers must not only watch ads but also sacrifice their privacy, as the TV collects extensive personal data. Such product offerings may have societal implications, as they may be more attractive to lower-income individuals.

The bachelor thesis aims to investigate whether free ad-supported products are preferred by people with lower income levels. One way to reach this aim is to conduct a survey among consumers from diverse income groups, gathering data on their willingness to use a free ad-supported product. Subsequently, the student could analyze differences in the responses of participants across income groups. The findings of the thesis may help to inform regulators about the potential societal consequences of free ad-supported products.

Requirements

- High interest in the topic
- High interest in empirical research
- Usage of statistical software (preferably R, Python, STATA, Excel)

Language

German or English

Literature

Lambrecht, Anja, Avi Goldfarb, Alessandro Bonatti, Anindya Ghose, Daniel G. Goldstein, Randall Lewis, Anita Rao, Navdeep Sahni, and Song Yao (2014), "How Do Firms Make Money Selling Digital Goods Online?," *Marketing Letters*, 25 (3), 331–41.

Smith, N. Craig and Elizabeth Cooper-Martin (1997), "Ethics and Target Marketing: The Role of Product Harm and Consumer Vulnerability," *Journal of Marketing*, 61 (3), 1–20.

Telly (2023), "Get the Ultimate Free TV Upgrade" (accessed July 31, 2023), [available at <https://www.freetelly.com/>].

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How Can Users Leverage Advertising to Boost the Ad Revenue for Their Preferred Websites?

Overview

Many digital companies offer free content or services while funding themselves through behaviourally targeted advertising. As this type of advertising relies on users' browsing behaviour, researchers have explored methods to obfuscate personal data and improve privacy. Interestingly, these privacy-enhancing strategies have been found to potentially result in higher advertising revenues for websites (Zhang et al. 2021). This presents an opportunity for users to not only protect their privacy but also to support their favourite websites by increasing advertising revenue.

The bachelor thesis aims to investigate how users may leverage behaviourally targeted advertising to boost the ad revenue for their preferred websites. One way to reach this aim is to first develop potential strategies for users to increase the websites' advertising revenues. Such strategies may involve creating fake browsing histories that indicate valuable user profiles or actively engaging with advertisements. In a second step, the study could evaluate the effectiveness of the strategies using browser extensions like Ad Radar, which collects data on the prices paid for the advertisements users encounter.

Requirements

- High interest in the topic
- High interest in empirical research

Language

German or English

Literature

AdNauseam (2023), "Clicking Ads So You Don't Have To" (accessed July 31, 2023), [available at <http://adnauseam.io>].

Degeling, Martin and Jan Nierhoff (2018), "Tracking and Tricking a Profiler: Automated Measuring and Influencing of Bluekai's Interest Profiling," in *Proceedings of the 2018 Workshop on Privacy in the Electronic Society (WPES'18)*, New York, NY, USA: Association for Computing Machinery (ACM), 1–13.

Zhang, Jiang, Konstantinos Psounis, Muhammad Haroon, and Zubair Shafiq (2022), "HARPO: Learning to Subvert Online Behavioral Advertising," in *Proceedings of Network and Distributed Systems Security (NDSS) Symposium 2022*, San Diego, CA, USA: Internet Society.

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Privacy-Friendly Website Analytics

Overview

Website analytics provides publishers with valuable insights into their audience's behavior. This information helps publishers tailor their content to better suit their audience's interests and needs. Moreover, analytics help them understand which parts of their website generate the most traffic and engagement, allowing them to optimize ad placement and maximize revenue. However, some website analytics tools and measurement techniques can be privacy-invasive for their users. Still, website publishers may avoid using more privacy-friendly alternatives due to uncertainties whether those solutions can provide comprehensive and adequate insights.

The bachelor thesis aims to investigate whether privacy-friendly website analytics tools allow to reliably measure website traffic. One way to reach this aim is to set up test websites and implement different analytics tools, including Google Analytics and more privacy-friendly alternatives. Subsequently, the student could artificially create website traffic and analyze the differences between the measured traffic metrics for the implemented analytics tools. The findings of the thesis may help to inform website publishers about the potential benefits and costs of using privacy-friendly website analytics tools.

Requirements

- High interest in the topic and in web development
- Coding experience (preferably R or Python)

Language

German or English

Literature

Akkus, Istemi Ekin, Ruichuan Chen, Michaela Hardt, Paul Francis, and Johannes Gehrke (2012), "Non-tracking web analytics," in *Proceedings of the 2012 ACM Conference on Computer and Communications Security (CCS '12)*, New York, NY, USA: Association for Computing Machinery (ACM), 687–98.

Pyrgelis, Apostolos, Emiliano De Cristofaro, and Gordon J. Ross (2016), "Privacy-Friendly Mobility Analytics Using Aggregate Location Data," in *Proceedings of the 24th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (SIGSPACIAL '16)*, New York, NY, USA: Association for Computing Machinery (ACM), 1–10.

Thaleikis, Peter (2023), "Awesome Privacy-Friendly Web-Analytics," (accessed August 4, 2023), [available at <https://github.com/spekulatus/awesome-privacy-friendly-web-analytics>].

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Simplifying Privacy Policies Using Large Language Models

Overview

Digital firms often collect and process their users' data. In adherence to European privacy regulations, these firms are required to maintain transparency in their usage of personal data. Therefore, firms typically provide privacy policies that are designed to explain the processing of personal data. However, privacy policies often present challenges for users due to their complexity and length (e.g., Libert 2018).

The aim of the bachelor thesis is to explore the potential of large language models, such as ChatGPT, to simplify privacy policies and make them more accessible to users. One way to reach this aim is to first apply a large language model to summarize and transform a privacy policy into a shorter, more comprehensible version. In the second step, the study could check whether the simplified versions of the privacy policies accurately depict the information from the original policy. Moreover, the thesis could evaluate whether the simplified privacy policies improve users' understanding of a firm's data processing.

Requirements

- High interest in the topic
- High interest in empirical research

Language

German or English

Literature

Libert, Timothy (2018), "An Automated Approach to Auditing Disclosure of Third-Party Data Collection in Website Privacy Policies," in *Proceedings of the 2018 World Wide Web Conference (WWW '18)*, Republic and Canton of Geneva, CHE: International World Wide Web Conferences Steering Committee, 207–16.

Tesfay, Welderufael B., Peter Hofmann, Toru Nakamura, Shinsaku Kiyomoto, and Jetzabel Serna (2018), "I Read but Don't Agree: Privacy Policy Benchmarking using Machine Learning and the EU GDPR," in *Companion Proceedings of the Web Conference 2018 (WWW '18)*, Republic and Canton of Geneva, CHE: International World Wide Web Conferences Steering Committee, 163–66.

Wagner, Isabel (2023), "Privacy Policies across the Ages: Content of Privacy Policies 1996–2021," *ACM Transactions on Privacy and Security*, 26 (3), 1-32.

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Has GDPR Reduced Data Breaches? An Empirical Analysis

Overview

Data breaches pose major risks to firms and their customers. The European Union's GDPR requires firms to report breaches within 72 hours and enforce robust data protection measures against them. However, is the GDPR truly effective? This thesis aims to assess whether firms encounter fewer data breaches after the enactment of GDPR, indicating its effectiveness. A possible approach could be to: (1) Explain the importance of customer data for a firm, (2) Outline the potential risks that can result from a firm's data breach for both the firm and its customers, (3) Outline the importance of GDPR in the context of firms' data breaches, (4) Analyze data on data breaches experienced by firms and conduct an empirical analysis using a before-and-after analysis. The student may utilize [Have I Been Pwned](#) website to analyze data for the empirical study. The student can choose to enrich that data set with data from other sources (e.g., [SimilarWeb](#), [Crunchbase](#)).

Requirements

- High interest in the topic
- Willingness to analyze the data (access to DataCamp tutorials can be provided)
- Experience with statistical software (preferably R or Python, STATA)

Language

English

Literature

Foerderer, Jens and Sebastian W. Schuetz (2022), "Data Breach Announcements and Stock Market Reactions: A Matter of Timing?," *Management Science*, 68 (10), 7298–7322.

Hammouchi, Hicham, Othmane Cherqi, Ghita Mezzour, Mounir Ghogho, and Mohammed El Koutbi (2019), "Digging Deeper Into Data Breaches: An Exploratory Data Analysis of Hacking Breaches Over Time," *Procedia Computer Science*, 151 (C), 1004–9.

Martin, Kelly D., Abhishek Borah, and Robert W. Palmatier (2017), "Data Privacy: Effects on Customer and Firm Performance," *Journal of Marketing*, 81 (1), 36–58.

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Exploring the Factors That Influence Firms' Data Breaches

Overview

Data breaches are increasingly common in the digital age and can cause significant harm to firms and their customers. However, limited research is available on this topic. This thesis aims to understand the factors that influence a firm's likelihood of experiencing a data breach. It could answer the following questions: "Which factors influence the likelihood of a firm experiencing a data breach?" A possible approach could be: (1) Explain the importance of customer data for a firm, (2) Outline the potential harms that can result from a firm's data breach for both the firm and its customers, (3) Gather data on data breaches experienced by firms and conduct an empirical analysis using logistic regression. To gather data for point (3), the student can use the Have I Been Pwned data on a sample of approximately 50 firms with the largest breaches. This data set should be enriched with information, e.g., from Crunchbase, to pair each breached firm with a similar firm that has not experienced a data breach.

Requirements

- High interest in the topic
- Willingness to collect and analyze the data (access to DataCamp tutorials can be provided)
- Experience with statistical software (preferably R or Python, STATA)

Language

English

Literature

D'Arcy, John, Idris Adjerid, Corey M. Angst, and Ante Glavas (2020), "Too Good to Be True: Firm Social Performance and the Risk of Data Breach," *Information Systems Research*, 31 (4), 1200–1223.

Martin, Kelly D., Abhishek Borah, and Robert W. Palmatier (2017), "Data Privacy: Effects on Customer and Firm Performance," *Journal of Marketing*, 81 (1), 36–58.

Martin, Kelly D. and Patrick E. Murphy (2016), "The Role of Data Privacy in Marketing," *Journal of the Academy of Marketing Science*, 45 (2), 135–55.

Stoltzfus, Jill C. (2011), "Logistic Regression: A Brief Primer," *Academic Emergency Medicine*, 18 (10), 1099–1104.

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The Underground Economy: Examining the Value of Personal Data on the Dark Web

Overview

Researchers often focus on the perspective of advertisers when assessing the value of personal data online. However, an alternative approach to determining the value of personal data is to analyze the prices of different data types (e.g., stolen credit card information, social media accounts) on the Dark Web. This research project aims to examine the value of various personal data types by addressing the following research questions: Which personal data type holds the highest price on the Dark Web? How does the personal data type influence its price on the Dark Web? A possible approach to structure the project could be: (1) Describe the importance of personal data and how to determine its value, (2) Explain the concept of the Dark Web and its role as a marketplace for online personal data, and (3) Collect empirical data to analyze the mentioned research questions (e.g., using ANOVA and regression analysis). The student can utilize the dataset on Dark Web prices of personal data obtained from PrivacyAffairs, spanning four years.

Requirements

- High interest in the topic
- Willingness to collect and analyze the data (access to DataCamp tutorials can be provided)
- Experience with statistical software (preferably R or Python, STATA, Excel)

Language

English

Literature

Steel, Chad M.S. (2019), "Stolen Identity Valuation and Market Evolution on the Dark Web," *International Journal of Cyber Criminology*, 13 (1), 70–83.

Thomaz, Felipe, Carolina Salge, Elena Karahanna, and John Hulland (2019), "Learning From the Dark Web: Leveraging Conversational Agents in the Era of Hyper-Privacy to Enhance Marketing," *Journal of the Academy of Marketing Science*, 48 (1), 43–63.

Zoltan, Miklos and Shanika W. (2023), "Dark Web Price Index 2023," *Privacy Affairs*, (accessed July 27, 2023), [available at <https://www.privacyaffairs.com/dark-web-price-index-2023/>].

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Privacy Factors and User Perceptions: Analyzing the Creepiness of Connected Tech Products

Overview

The number of connected tech products (e.g., apps, wearables, smart home devices, and consoles) is expected to double from 15.1 billion in 2020 to over 29 billion in 2030 worldwide (Lionel, 2022). While such products offer benefits to users, they also raise privacy concerns. However, it is currently unclear how privacy features, such as the type of collected data, data encryption, or security updates, influence the perceived creepiness of a connected tech product among users. This research project aims to investigate the factors that influence the perceived creepiness of connected tech products. It could answer the following research questions: How do privacy factors of a connected tech product affect its perceived creepiness? A possible approach could be: (1) Create a web crawler to collect data from *Privacy Not Included on connected tech products, their features, and users' perceived creepiness scores, (2) Prepare a dataset for analysis, and (3) Use regression analysis to address the research questions.

Requirements

- High interest in the topic
- Willingness to collect and analyze the data (access to DataCamp tutorials can be provided)
- Experience with statistical software (preferably R or Python, STATA)

Language

English

Literature

moz://a (2023), “*Privacy Not Included: A Buyer’s Guide for Connected Products,” (accessed July 27, 2023), [available at <https://foundation.mozilla.org/en/privacynotincluded/>].

Vailshery, Lionel (2022), “IoT Connected Devices Worldwide 2019-2030,” *Statista*, (accessed July 27, 2023), [available at <https://www.statista.com/statistics/1183457/iot-connected-devices-worldwide/>].

Woźniak, Paweł W., Jakob Karolus, Florian Lang, Caroline Eckerth, Johannes Schöning, Yvonne Rogers, and Jasmin Niess (2021), “Creepy Technology: What Is It and How Do You Measure It?,” in *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21)*, New York, NY, USA: Association for Computing Machinery (ACM), 1–13.

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Towards Greener Browsing: Investigating Carbon Footprint of Popular Websites

Overview

While being a crucial part of our digital era, websites contribute to the internet's expanding carbon footprint. Yet, the specifics of their contributions—how much, which ones contribute most, and the influencing factors—are still unclear. Addressing these questions can shed light on the often-overlooked impact of internet usage on the environment, help developers create more energy-efficient sites, or provide consumers with guidelines to choose environmentally-friendly sites, promoting greener browsing. This research project aims to understand the environmental impact of sites. One possible approach could be: (1) Explain the importance of reducing the carbon footprint, (2) Describe how sites contribute to the increased carbon footprint, (3) Collect data for a descriptive empirical study using a sample of, e.g., 100 popular sites worldwide or in Germany, (4) Conduct an empirical study (e.g., by using a regression analysis). The student could use the [Website Carbon Calculator](#), [Ecograder](#), or [SimilarWeb](#) as data sources.

Requirements

- High interest in the topic
- Willingness to collect and analyze the data (access to DataCamp tutorials can be provided)
- Experience with statistical software (preferably R or Python, STATA)

Language

English

Literature

Greenwood, Tom and Rachel He (2021), *Sustainable Web Design*, New York, N.Y.: A Book Apart.
Mightybytes and Wholegrain Digital (2022), "What Is Sustainable Web Design?," *Sustainable Web Design*, (accessed July 26, 2023), [available at <https://sustainablewebdesign.org>].
Mitchell, Ronald B. and Richard York (2020), "Reducing the Web's Carbon Footprint: Does Improved Electrical Efficiency Reduce Webserver Electricity Use?," *Energy Research & Social Science*, 65, <https://doi.org/10.1016/j.erss.2020.101474>.

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Assessing the Impact of Privacy Concerns on the Adoption of Generative AI Technologies Among Consumers

Overview

Generative AI, such as ChatGPT, has significantly impacted various sectors. However, it also brings substantial privacy concerns for consumers because of sharing private and, in particular, sensitive data. The consumer's perception of these concerns might significantly affect their willingness to adopt such technology. This thesis investigates the relationship between consumers' privacy concerns and their adoption of generative AI technologies. The objectives of the thesis are: (1) To determine the level of awareness among consumers about privacy concerns associated with generative AI and (2) To establish the connection between these privacy concerns and consumers' willingness to adopt generative AI technologies. One potential way to accomplish these objectives is to engage a sample of participants through a questionnaire survey, including demographic questions, awareness of generative AI, and specific privacy concerns. The student could analyze the collected data with statistical methods (e.g., regression analysis) to determine trends and correlations. In addition to potentially offering insights for technology companies and regulators, this thesis seeks to contribute to the increasing academic discussion of privacy concerns in the digital age and their implications for adopting innovative technologies like Generative AI.

Requirements

- High interest in the topic
- Willingness to design questionnaire and collect the data
- Knowledge of statistics or econometrics (Access to DataCamp platform can be provided upon request)

Language

English (Questionnaire of the survey can be in German)

Literature

Gupta, Maanak, Charankumar Akiri, Kshitiz Aryal, Eli Parker, and Lopamudra Praharaj (2023), "From ChatGPT to ThreatGPT: Impact of Generative AI in Cybersecurity and Privacy," *IEEE Access*, 11, <https://doi.org/10.1109/ACCESS.2023.3300381>.

Masur, Philipp K. (2020), "How Online Privacy Literacy Supports Self-Data Protection and Self-Determination in the Age of Information," *Media and Communication*, 8 (2), 258–69.

Paul, Justin, Akiko Ueno, and Charles Dennis (2023), "ChatGPT and Consumers: Benefits, Pitfalls and Future Research Agenda," *International Journal of Consumer Studies*, 47 (4), 1213–25.

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The Impact of Google's Manifest V3 on Ad Blockers' Effectiveness

Overview

Ad blockers use a file called "Manifest" to define their capabilities. In December 2020, Google announced its plan to discontinue Manifest Version 2 (V2) and transition to Manifest Version 3 (V3), which should significantly reduce ad-blocking effectiveness. Google justifies this move to enhance user privacy, but ad blocker developers perceive it as an attempt to reduce ad blocking, thereby increasing ad revenue for Google and publishers. This research project aims to assess the effectiveness of ad blockers adopting Manifest V3. The research question could be: "Are ad blockers that have adopted Manifest V3 less effective in blocking ads than those relying on Manifest V2?" One possible approach to answer this question is to simulate a user's browser with a Manifest V2 ad blocker and compare its ad-blocking effectiveness to a Manifest V3 ad blocker while browsing popular news websites in Germany or worldwide. The student can employ tools like Puppeteer to carry out this approach.

Requirements

- High interest in the topic
- Willingness to analyze the data (access to DataCamp tutorials can be provided)
- Experience with statistical software (preferably R or Python, STATA)

Language

English

Literature

Li, David (2020), "Manifest V3 Now Available on M88 Beta," *Chromium Blog*, (accessed August 31, 2023), [available at <https://blog.chromium.org/2020/12/manifest-v3-now-available-on-m88-beta.html>].

Frisbie, Matt (2023), "Understanding the Implications of Manifest V3," in *Building Browser Extensions: Create Modern Extensions for Chrome, Safari, Firefox, and Edge*, M. Frisbie, ed., Berkeley, CA: Apress, 167–85.

WhoTracks.me Privacy Team (2019), "Chrome's Manifest V3 - Improving Privacy?," *WhoTracks.me Blog*, (accessed August 31, 2023), [available at https://whotracks.me/blog/manifest_v3_privacy.html].

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Can AI Models Help in Business Valuations? Field Study for Customer Related Metrics

Overview

The emergence of AI language models (such as ChatGPT) has made it quicker and easier to retrieve publicly available information. While it might help, on the one hand, to find specific details, it also brings the risk of encountering false statements. A modern approach called Customer-Based Corporate Valuation relies on customer data to assess a company's value. However, the process becomes inefficient if companies do not publish the needed data in a user-friendly way. Can this new technology help in the valuation process? It could include helping in the data analysis, assisting in calculations such as estimating the customer lifetime value or performing sensitivity analyses to understand how changes in customer-related metrics might affect the overall valuation outcome. This thesis aims at assessing how and to what extent AI models can help with the above steps. The student could value the same company once manually and once with the help of an AI model and compare the process and outcome.

Requirements

- Highly motivated to learn about Customer-Based-Corporate Valuation
- Willingness to collect and analyze data with the help of AI language models, SEC files, or Bloomberg

Language

English (preferred and recommended) / German

Literature

Gupta, Sunil, Donald R. Lehmann, and Jennifer Ames Stuart (2004), "Valuing Customers," *Journal of Marketing Research*, 41 (1), 7–18.

Kim, Alex G, Maximilian Muhn, and Valeri V Nikolaev (2023), "Bloated Disclosures: Can ChatGPT Help Investors Process Information?," Chicago Booth Research Paper No. 23-07, SSRN (July 3), <https://dx.doi.org/10.2139/ssrn.4425527>.

McCarthy, Daniel M., Peter S. Fader, and Bruce G.S. Hardie (2017), "Valuing Subscription-Based Businesses Using Publicly Disclosed Customer Data," *Journal of Marketing*, 81 (1), 17–35.

Skiera, Bernd and Christian Schulze (2014), "Customer-Based Valuation: Similarities and Differences to Traditional Discounted Cash Flow Models," in *Handbook of Service Marketing Research*, R. T. Rust and M.-H. Huang, eds., Cheltenham, UK: Edward Elgar Publishing Limited, 123–34.

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An Evaluation of Opportunities to Calculate Customer Lifetime With a Neural Network

Overview

Firms following a customer-centric business approach need to know how their clientele will behave on different future time scales and levels of behavioral complexity. In such an environment, marketing serves the purpose of maximizing customer lifetime value (CLV). The emergence of new methods using deep learning adds to the literature. However, using new methods does not always lead to a more precise outcome, in this case, determining CLV.

Hence the thesis aims at assessing a recurrent neural network method and expanding the existing applications regarding datasets, demonstrating further potential proof of the applicability.

The student could use a Long-Short-Term Memory (LSTM) recurrent neural network methodology and apply it to several publicly available datasets, preferably in a non-contractual setting. Code for such a model exists on Github (e.g. valendin/rfm2lstm).

Requirements

- Highly motivated learning about CLV
- Willingness to analyze data and apply a deep learning method
- Experience with statistical software and statistics preferred (Python, R)

Language

English (preferred and recommended) / German

Literature

Gupta, Sunil, Dominique Hanssens, Bruce Hardie, William Kahn, V. Kumar, Nathaniel Lin, Nalini Ravishanker, and S. Sriram (2006), "Modeling Customer Lifetime Value," *Journal of Service Research*, 9 (2), 139–55.

Valendin, Jan, Thomas Reutterer, Michael Platzer, and Klaudius Kalcher (2022), "Customer Base Analysis With Recurrent Neural Networks," *International Journal of Research in Marketing*, 39 (4), 988–1018.

Van Houdt, Greg, Carlos Mosquera, and Gonzalo Nápoles (2020), "A Review on the Long Short-term Memory Model," *Artificial Intelligence Review*, 53 (8), 5929–55.

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An Exploration of Differences in the Results of Variance Analysis With the Path Method and Traditional Methods

Overview

The basic idea behind the accountants' variance analysis, not to be confused with statisticians' analysis of variance, is to decompose the variation of a "performance variable" (dependent variable) into variations of a set of independent variables ("drivers") that impact the variation of the performance variable. Typical performance variables are budgets, costs, revenues, or profits. The existing methods to conduct variance analysis suffer from critical shortcomings if the relationship between the performance variable and its drivers is nonlinear, which is usually the case. Skiera et al. (2023) suggest a novel method in variance analysis, called the path method, that avoids these shortcomings. The aim of the thesis is to examine whether the differences between the path method and the existing methods differ. One way to address this aim is to look at case studies and their teaching notes to compare the suggested solution with the path method's solution and derive its differences.

Requirements

- Motivation to understand path method
- Ability to read and understand case studies (in English)
- Interest in decomposition methods

Language

English / German

Literature

Coenenberg, Adolf G., Thomas M. Fischer, and Thomas Günther (2016), "6.4: Abweichungsanalyse der Kosten," in *Kostenrechnung und Kostenanalyse*, Stuttgart, Germany: Schäffer-Poeschel Verlag, 265–66.

Kloock, Josef and Ulf Schiller (2017), "Marginal Costing: Cost Budgeting and Cost Variance Analysis," *Management Accounting Research*, 8 (3), 299–323.

Skiera, Vincent, Markus Lilienthal, and Bernd Skiera (2023), "Introducing the Path Method: A Solution to Nonlinear Challenges in Variance Analysis," Working Paper [Request Karlo Lukic to get access to Skiera et al., 2023].

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How Do I Value My Data? Willingness to Pay for a Digital Product With Guaranteed Privacy

Overview

The digital age offers numerous free products and services, monetized through data collection and targeted ads, with platforms like TikTok and Instagram being prime examples. However, growing data privacy concerns have spurred interest in more private alternatives. Yet, the crucial question is whether users are willing to pay for more private alternatives. This thesis aims to analyze users' willingness to pay (WTP) for products that are less privacy intrusive. The WTP could be evaluated through a student-designed questionnaire or a publicly available dataset, e.g., on websites such as Kaggle.

This study will shed light on users' views on data privacy and their readiness to fund privacy-focused products. Such insights can help businesses create privacy-centric monetization strategies, ensuring a transparent and privacy-conscious user experience.

Requirements

- High interest in customer data and associated privacy risks
- Willingness to design questionnaire
- Ability to work conceptually and empirically

Language

English (preferred and recommended) / German

Literature

Lambrecht, Anja, Avi Goldfarb, Alessandro Bonatti, Anindya Ghose, Daniel G. Goldstein, Randall Lewis, Anita Rao, Navdeep Sahni, and Song Yao (2014), "How Do Firms Make Money Selling Digital Goods Online?," *Marketing Letters*, 25 (3), 331–41.

Pauwels, Koen and Allen Weiss (2008), "Moving From Free to Fee: How Online Firms Market to Change Their Business Model Successfully," *Journal of Marketing*, 72 (3), 14–31.

Prince, Jeffrey and Scott Wallsten (2021), "Empirical Evidence of the Value of Privacy," *Journal of European Competition Law & Practice*, 12 (8), 648–54.

Winegar, A. G. and C. R. Sunstein (2019), "How Much Is Data Privacy Worth? A Preliminary Investigation," *Journal of Consumer Policy*, 42 (3), 425–40.

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