Seminararbeit AI-assisted programming and data analysis

Data Profiling with LLM's a Case Study on HR Data

Vincent Kapp[a,1,*], Prof. Dr. Martin Spindler[b,2]

[a]*Universität Hamburg, M.Sc. BWL, Street Address, Hamburg, Postal Code*

[b]*Universität Hamburg, Statistik mit Anwendung in der Betriebswirtschaftslehre, Street Address, Hamburg, Postal Code*

Abstract

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Keywords: LLM, Data Analysis, Data Profiling

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[*]Corresponding author

Email addresses: `vincent.kapp@studium.uni-hamburg.de` (Vincent Kapp), `martin.spindler@uni-hamburg.de` (Prof. Dr. Martin Spindler)

[1]This is the first author footnote.

[2]Another author footnote, this is a very long footnote and it should be a really long footnote. But this footnote is not yet sufficiently long enough to make two lines of footnote text.

1. Einleitung

Datengetriebene Prozesse können nicht nur Unternehmen beim Optimieren der Prozesse sondern auch bei der entwicklung neuer Strategien helfen. Aber uum festzustellen welche Daten in den Datenbanken vorliegen und wie diese zu einernander stehen braucht es Mitarbeiter*innen die einzelnd überprüfen welche Daten es gibt und in welchen zusammenhängen, ausgehend von Commen Sense, es gibt. Data Profiling stellt Unternehmen mit historisch gewachsene Datenbanksysteme vor Herausforderungen für die Dategetriebene Transformation da. Können die aktuellen entwicklunge von Large Language Modellen (LLM) dazu beitragen, autamtisiert die zusammenhängen von Spalten zu erkennen? Um diese Frage zu beantworten, widmet sich diese Seminararbeit aufbauen von der Arbeit von Trummer 2024, wie gut LLM, anhand einer Case Study, die Korrelation von Daten zu erkennen.

Philipp Bach, Victor Chernozhukov, Martin Spindler (2024). Heterogeneity in the U.S. Gender Wage Gap. Journal of the Royal Statistical Society: Series A, 187(1), 209-230, available online.

Philipp Bach, Victor Chernozhukov, Martin Spindler, Closing the U.S. gender wage gap requires understanding its heterogeneity, Working Paper, available at arXiv, 2018.

Sven Klaassen, Jan Teichert-Kluge, Philipp Bach, Victor Chernozhukov, Martin Spindler, Suhas Vijaykumar, DoubleMLDeep: Estimation of Causal Effects with Multimodal Data, available at arxiv, 2024.

?

Here are two sample references: **? ?**.

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- `citestyle: numbername` will use `elsarticle-num-names.bst` - can be used for numbered with new options of natbib.sty
- `citestyle: authoryear` will use `elsarticle-harv.bst` — can be used for author year scheme

This `citestyle` will insert the right `.bst` and set the correct `classoption` for `elsarticle` document class.

Using `natbiboptions` variable in YAML header, you can set more options for `natbib` itself . Example

```
natbiboptions: longnamesfirst,angle,semicolon
```

2. Hintergrund

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2.1. Data Profiling

2.2. Korrelation ermittelnt

2.3. Sprachmodelle

2.4. NLP for Data Bases

2.5. Benchmark

2.5.1. Equations

Here is an equation:

$$f_X(x) = \left(\frac{\alpha}{\beta}\right)\left(\frac{x}{\beta}\right)^{\alpha-1} e^{-\left(\frac{x}{\beta}\right)^{\alpha}} ; \alpha, \beta, x > 0.$$

Inline equations work as well: $\sum_{i=2}^{\infty}\{\alpha_i^{\beta}\}$

2.5.2. Figures and tables

?@fig-meaningless is generated using an R chunk.

```
#{r} #| label: fig-meaningless #| fig-cap: A meaningless scatterplot
#| fig-width: 5 #| fig-height: 5 #| fig-align: center #| out-width:
50% #| echo: false plot(runif(25), runif(25))
```

3. Tables coming from R

Tables can also be generated using R chunks, as shown in **?@tbl-simple** example.

```
#{r} #| label: tbl-simple #| tbl-cap: Caption centered above
table #| echo: true knitr::kable(head(mtcars)[,1:4])
```