

RUHR-UNIVERSITÄT BOCHUM

L^AT_EX-Einführung

11.10.2011

Lehrstuhl sozialwissenschaftliche Methodenlehre und Sozialstatistik

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RUB



Entwicklung

bis 1400	Handschriftliches Kopieren
um 1400	Block- oder Holztafeldruck
1445	Buchdruck mit beweglichen Lettern
1822	Maschinensatz
1969	Fotosatz
1985	Digitalsatz



Foto: flickr.com/wilhei55

Geschichte von \LaTeX

- 1977 Donald E. Knuth beginnt mit der Arbeit an \TeX und METAFONT
- 1984 Leslie Lamport veröffentlicht die erste Version von \LaTeX
- 1985 \LaTeX 2.09 wird veröffentlicht
- 1994 Standardisierung und Veröffentlichung von \LaTeX 2 ϵ
- seit 2000 Veröffentlichung von Derivaten wie \XeLaTeX oder \LuaTeX



Donald E. Knuth
Foto: Dasha Slobozhanina

L^AT_EX ist eine Auszeichnungssprache

Ein Beispiel für die L^AT_EX-Syntax

```
\section{Gliederung des Textes}
In LaTeX werden die Gliederungsebenen
genauso wie Textauszeichnungen durch
\textit{Schlüsselwörter} definiert.
```

und dem resultierenden Ergebnis:

Gliederung des Textes

In LaTeX werden Überschriften und Gliederungsebenen genauso wie Textauszeichnungen durch *Schlüsselwörter* definiert.

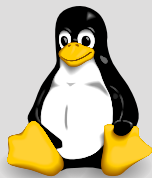
Wo kann ich \LaTeX herunterladen?



www.miktex.org



www.tug.org/mactex



www.tug.org/texlive

Themen

- 1 \LaTeX -Grundlagen
- 2 Seiteneinrichtung und Dokumentgliederung
- 3 Tabellen und Grafiken
- 4 Einbindung von Literaturdatenbanken und das automatische Erstellen von Literaturverzeichnissen
- 5 Formelsatz
- 6 Zeichnen mit LaTeX
- 7 Präsentationen mit LaTeX erstellen.

INTRODUCTION

The well-known saying that the map is not the territory is illustrated as a global data visualization in the following visualization. The visualization shows the world map as a globe. The globe is divided into regions, and each region is colored according to its population. The colors range from light yellow to dark red, indicating the density of the population. The map is presented in a 3D perspective, giving it a sense of depth and realism.

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Figure 1: A 3D visualization of the world map showing population density. The map is presented in a 3D perspective, giving it a sense of depth and realism. The colors range from light yellow to dark red, indicating the density of the population.

When we consider a data set, we are usually interested in the following aspects:

- What are the interesting values in the data set?
- What are the interesting relationships between the data points?
- What are the interesting patterns in the data set?
- What are the interesting trends in the data set?

3.1. FORCE

The visualization shows the force of the data set. The force is represented by the size of the data points. The larger the data point, the stronger the force. The force is also represented by the color of the data points. The colors range from light yellow to dark red, indicating the strength of the force.

Vorwort

Wir sind froh, dass die Welt
denkbar, mit ja! (Ludwig) (1900)



Hans-Joachim Raabe (1900)

Die erste Lektüre dieses Buches ist ein
großes Vergnügen. Die zweite Lektüre
ist ein großes Vergnügen. Die dritte
Lektüre ist ein großes Vergnügen.
Die vierte Lektüre ist ein großes
Vergnügen. Die fünfte Lektüre ist
ein großes Vergnügen. Die sechste
Lektüre ist ein großes Vergnügen.
Die siebte Lektüre ist ein großes
Vergnügen. Die achte Lektüre ist
ein großes Vergnügen. Die neunte
Lektüre ist ein großes Vergnügen.
Die zehnte Lektüre ist ein großes
Vergnügen.

Quantity implications, exhaustive interpretation, and
circular conversations

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Abstract: Quantity implications are relations between sets of sentences. In this paper, we investigate the complexity of quantity implications. We show that the complexity of quantity implications is PSPACE-complete. We also show that the complexity of exhaustive interpretation is PSPACE-complete. Finally, we show that the complexity of circular conversations is PSPACE-complete.

Keywords: quantity implications, exhaustive interpretation, game theory, normal form

1. INTRODUCTION

In this paper, we investigate the complexity of quantity implications. We show that the complexity of quantity implications is PSPACE-complete. We also show that the complexity of exhaustive interpretation is PSPACE-complete. Finally, we show that the complexity of circular conversations is PSPACE-complete.

2. PRELIMINARIES

In this section, we review some basic concepts from game theory. We assume that the reader is familiar with the basic concepts of game theory.

3. QUANTITY IMPLICATIONS

In this section, we define quantity implications and investigate their complexity. We show that the complexity of quantity implications is PSPACE-complete.

4. EXHAUSTIVE INTERPRETATION

In this section, we define exhaustive interpretation and investigate its complexity. We show that the complexity of exhaustive interpretation is PSPACE-complete.

5. CIRCULAR CONVERSATIONS

In this section, we define circular conversations and investigate their complexity. We show that the complexity of circular conversations is PSPACE-complete.

6. CONCLUSION

In this section, we conclude the paper. We show that the complexity of quantity implications, exhaustive interpretation, and circular conversations is PSPACE-complete.

INTRODUCTION

The web has come a long way since its inception when it functioned as a global interconnected system for document sharing amongst researchers (Berners-Lee et al., 1992, p. 82). We've seen the coming of an increasingly more social web as "the digital domain has seen a significant growth in the scale and richness of on-line communities" (Backstrom et al., 2006, p. 44). There have been an increase from 18% to 45% ¹ in blog usage by the general public² in an 18 month period from 2005 to 2007. It has been argued that web citizens' familiarity with blogging laid the groundwork for the explosion we are seeing in user participation in web communities (Weiss, 2005, p. 20; Beer and Burrows, 2007, paragraph 2.2).

At the same time advances in hardware and web development tools have made it easier and cheaper to create new web sites. We're now seeing an abundance of new offerings in this field. It has been argued that many of the concepts this modern web brings are evolutionary instead of revolutionary (Yakovlev, 2007, p. 45). Treese (2006, p. 17) also witnesses a continuous evolution, but with exploratory innovations as he notes that most technological changes are incremental.³ Weiss (2005, p. 18) have noticed this trend:

When we consider a hot, buzz-worthy Web site of the new Internet evolution [...] they are at the same time incredibly innovative and yet - not.

What we're experiencing today with the World Wide Web and social/collaborative software systems was envisioned several decades ago by Licklider and Taylor (1968) and Bush (1945).

During the initial studies of our research we frequented many of these modern web sites. Our impression is that this area of the web infamously coined Web 2.0 - an increment in version opposed to the age when the Web was in its infancy - is bringing interesting innovations. While they might not be groundbreaking, we justify a closer look at them in this thesis.

1.1 FOCUS

This thesis have a focus on navigational problems and only those which are of a social type.⁴ Navigation in context of computer systems is essentially a metaphor based on how people find their way in the physical

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1. Represented with a total of 6,545 respondents to a survey conducted in Canada, France, Germany, Japan, the United Kingdom, and the United States by Rosa et al. (2007, ch. 1, p. 2).

2. Knuth (2007) also believes innovation in computer science is incremental: "I firmly believe that computer science advances by thousands of people solving small problems, which go together and create a massive edifice. Every year that goes by, hardly anything is done that appears to be a milestone worthy of mass attention; yet after five or ten years pass, the whole field has changed significantly".

3. Take a look at § 4.4 (p. 33) to learn more about navigational systems with social characteristics.

Vorwort

Wie sonderbar, dass ich, der ich die Welt beherrsche, mit 32 Schachfiguren nicht fertig werde.



HARUN AL-RASCHID (763–809),
abbasidischer Kalif

MEINE Liebesbeziehung mit der Französischen Verteidigung begann im Jahre 1988: In den vorangegangenen Jahren hatte ich als Weißspieler gegen Französisch stets mit großen Problemen zu kämpfen gehabt, nun wollte ich mir als Schwarzer von meinen künftigen Gegnern die rechte Vorgehensweise zeigen lassen ... Obwohl Französischadepten in der Anfangsphase zumeist etwas Lehrgeld zahlen müssen, lächelte mir die holde Französin von Anfang an zu: Auf der Jagd nach meiner zweiten und dritten Großmeisternorm gelangen mir auf Anhieb in Lugano und Dortmund 1988 zwei wichtige Schwarzsiege gegen die starken Großmeister MARK HERDEN und PETAR POPOVIC. Auch für Französisch-Connoisseur LEV PSAKHIS hat »Die Französin« offenbar weiblichen Charakter, im Vorwort zu seinem Standardwerk *The Complete French* vergleicht er Französisch mit einer stolzen Frau, die ihre letzten Geheimnisse nur dem offenbart, der sich ihr mit ganzem Herzen hingibt! Tatsächlich weiß ein erfahrener Spieler, dass jedes Eröffnungssystem seinen ganz eigenen Flair und Charakter hat. Von wem? großer Leidenschaft spricht erst WOLFGANG UHLMANNs Werk: *Ein Leben lang Französische Verteidigung!* Trotz einiger kleiner Seitensprünge mit Pirc und Skandinavisch, von denen ich stets räumlich zurückkehrte, bin ich die letzten zwölf Jahre der Französin treu geblieben und wurde (trotz mancher unvermeidlicher Rückschläge) dafür zumeist reich belohnt.

Was aber macht nun tatsächlich Reiz und Charakter dieser speziellen Verteidigung aus? Schwarz errichtet in den ersten beiden Zügen einen festen Bauernwall im Zentrum (e6 und d5), der nicht im Sturm genommen werden kann. Wie die Erfahrung der letzten

Quantity implicatures, exhaustive interpretation, and rational conversation*

Michael Franke
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Second Decision 2011-03-19 / Revision Received 2011-03-27 / Published 2011-06-21

Abstract Quantity implicatures are inferences triggered by an utterance based on what other utterances a speaker could have made instead. Using ideas and formalisms from game theory, I demonstrate that these inferences can be explained in a strictly Gricean sense as *rational behavior*. To this end, I offer a procedure for constructing the context of utterance insofar as it is relevant for quantity reasoning as a game between speaker and hearer. I then give a new solution concept that improves on classical equilibrium approaches in that it uniquely selects the desired "empirically correct" play in these interpretation games by a chain of back-and-forth reasoning about players' behavior. To make this formal approach more accessible to a wider audience, I give a simple algorithm with the help of which the model's solution can be computed without having to do heavy calculations of probabilities, expected utilities and the like. This rationalistic approach subsumes and improves on recent exhaustivity-based approaches. It makes correct and uniform predictions for quantity implicatures of various epistemic varieties, free choice readings of disjunctions, as well as a phenomenon tightly related to the latter, namely so-called "simplification of disjunctive antecedents".

Keywords: quantity implicature, exhaustive interpretation, game theory, iterated best response

* I am very grateful for countless conversations with many colleagues and friends that helped shape the thoughts of this paper. In particular, I would like to express my sincere gratitude to my teachers Robert van Rooij, Martin Stokhof and Gerhard Jäger for many invaluable lessons and other acts of kindness. Thanks also to Tikitū de Jager for highly-esteemed companionship, to Anton Benz for his support, and to Christian Ebert and Jason Quinsley for help on the manuscript. The paper has benefited enormously from the critical but constructive comments provided by David Beaver and three anonymous referees. Remaining errors are mine.

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Theorem 1 (Residue Theorem). Let f be analytic in the region G except for the isolated singularities a_1, a_2, \dots, a_m . If γ is a closed rectifiable curve in G which does not pass through any of the points a_k and if $\gamma \approx 0$ in G then

$$\frac{1}{2\pi i} \int_{\gamma} f = \sum_{k=1}^m n(\gamma; a_k) \operatorname{Res}(f; a_k).$$

Theorem 2 (Maximum Modulus). Let G be a bounded open set in \mathbb{C} and suppose that f is a continuous function on G^- which is analytic in G . Then

$$\max\{|f(z)| : z \in G^-\} = \max\{|f(z)| : z \in \partial G\}.$$

ΑΑΔ∇BCDΣΕΕFGHIJKLMNOΘΩΡΦΠΞQRSTUVWXYΥΨΖ 1234567890
 ααββcδdδeεεfζξgγhηhιiιjκκκλλλmnnηθθoσςφφρρρρqrstτπυμνςςωωxχyψz ∞ ∞ ∅dδ ε

Quelle: <http://www.ctan.org/pkg/free-math-font-survey>

Mögliche Termine & Aufgaben

Termine

Freitag 02. und 09. Dezember 2011,
10.00–16.00 Uhr
im Raum GBCF 04/252

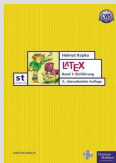
Aufgaben

Bringen Sie eine Hausarbeit im DOC- oder TXT-Format mit – diese werden wir in den praktischen Übungen verwenden.

Literatur zum Selbststudium



Mittelbach/Goossens (2005): Der \LaTeX -Begleiter, München.



Kopka (2000): \LaTeX . Band 1: Einführung, München.
Im E-Book-Portal der RUB: http://www.wiso-net.de/r_ebook/webcgi?START=A60&DOKV_DB=PEAR,APEA&DOKV_NO=9783827370389521&DOKV_HS=0



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