Propagación de Información en una red Social

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Este es el resumen Técnico de nuestro proyecto de IA-Simulación para el Curso 2024 , En este proyecto nos propusimos responder a las siguientes interrogantes; ¿Como se difunde la Información en una Red Social? y ¿Sabiendo esto podremos crear una Publicación que se adecúe a nuestras necesidades y que tenga el Mayor crecimiento Posible? . Para responder a esto Creamos una herramienta basándonos en los conocimientos adquiridos en las asignaturas de IA y Simulación y datos recopilados a través de la Investigación y revisión de la bibliografía disponible

Additional Key Words and Phrases: Simulación, Inteligencia Artificial, Red Social

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1 INTRODUCTION

Este es el Resumen Técnico de nuestro proyecto de IA-Simulación para el Curso 2024. En este proyecto nos propusimos responder a las siguientes interrogantes: ¿Cómo se difunde la Información en una Red Social? y ¿Sabiendo esto, podremos crear una Publicación que se adecúe a nuestras necesidades y que tenga el Mayor Crecimiento Posible? Para abordar estas cuestiones, creamos una herramienta basada en una interfaz en lenguaje natural para interactuar con el usuario, además de una simulación multiagente con arquitectura BDI. Este enfoque nos permitió aprovechar los conocimientos adquiridos en las asignaturas de IA y Simulación, así como los datos recopilados a través de la investigación y revisión de la bibliografía disponible.

2 ACERCA DE LA DIFUSIÓN DE LA INFORMACIÓN EN REDES SOCIALES

Como Parte de nuestra investigación para la creación de este proyecto , nos dimos a la tarea de encontrar y comprender el estado del arte en la representación y análisis computacional de los sitemas sociales complejos como las Redes sociales. Estudiamos El panorama Histórico de la Modelación de este tipo de problemas y Su relación con el Modelo SIR para la propagación de epidemias https://theconversation.com/covid-19-y-difusion-de-innovaciones-parecidos-razonables-157385. Dimos con el Modelo de Difusión de opiniones de Rogers el cuál explica la dinámica de las opiniones a una macro escala , sin tener en cuenta los eventos locales https://www.eurekando.org/ciencias-sociales/teoria-de-la-difusion-de-rogers-innovacion-y-difusion/. Analizamos también algunos Modelos Clásicos utilizados para analizar este tipo de problemas. Los problemas Binarios eran simulaciones multiagente donde los agentes tenian solo dos posibles opiniones respecto a un tema -1 o 1 . La forma en que se difundían estas opiniones era variada en dependencia del autor , algunos ejemplos son : Propagación de opiniones por vecinos cercanos (Modelo de Voter) , Opinión Mayoritaria del grupo al que pertenece el agente (Modelo de Majority Rule) , Propagación por los Vecinos con la misma Opinión (Modelo Szrajd) . Una evolución a estos modelos son los modelos Continuos o Modelos Socio-Físicos en los cuales ya los agentes tienen opiniones no binarias , osea un grado de seguridad respecto a su postura con el tema . Algunas formas de propagación de opiniones en estos modelos son : A través de un confidence level o nivel de confianza , esto significa que cuando dos agentes interactúan varían sus opiniones según su nivel de confianza hacia esta (Deffort y Hegselmann-Krausse).

2.1 Nuestro Modelo de Simulación

Nuestra simulación es un sistema multiagente que usa la arquitectura BDI para modelar el comportamiento de un usuario humano dentro de la red .El medio donde se colocan los agentes es una red donde cada agente tiene un nivel de confianza con el resto de agentes , esto es un valor [-1,1] donde 0 significa que el agente (visto como un nodo) está completamente desconectado y el resto indica que tan bien o mal le cae el otro agente . Las interacciones posibles que tienen los agentes son : dar like a la publicacion i , dar dislike a la publicacion i , compartir la publicacion i , con el agente j

2.2 Representación de los datos

Nuestro sistema desde el punto de vista de los modelos Socio-Físicos es un modelo multitema tipo CODA (Continous Opinions , Discrete Actions) esto debido a que manejamos las opiniones como un parametro privado de los agentes individuales , y estos solo tienen un rango discreto de acciones a realizar .Representamos las Publicaciones al igual que las opiniones como arreglos de numeros , en el caso de las publicaciones numeros entre 0 y 1 que representan que tan relevante es el tema en la publicacion ; y en el caso de las opinione de los agentes serían numeros entre -1 y 1 que representan que tan de acuerdo esta el agente con el tema en cuestión

3 MODIFICATIONS

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```

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```
\author{Brooke Aster, David Mehldau}
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```
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```

Omitting this command will force the use of a concatenated list of all of the authors' names, which may result in overlapping text in the page headers.

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CCS concepts and user-defined keywords are required for for all articles over two pages in length, and are optional for one- and two-page articles (or abstracts).

9 SECTIONING COMMANDS

Your work should use standard LATEX sectioning commands: `section`, `subsection`, `subsubsection`, and `paragraph`. They should be numbered; do not remove the numbering from the commands.

Simulating a sectioning command by setting the first word or words of a paragraph in boldface or italicized text is **not allowed.**

10 TABLES

The "acmart" document class includes the "booktabs" package — https://ctan.org/pkg/booktabs — for preparing high-quality tables.

Table captions are placed *above* the table.

Because tables cannot be split across pages, the best placement for them is typically the top of the page nearest their initial cite. To ensure this proper "floating" placement of tables, use the environment **table** to enclose the table's contents and the table caption. The contents of the table itself must go in the **tabular** environment, to be aligned properly in rows and columns, with the desired horizontal and vertical rules. Again, detailed instructions on **tabular** material are found in the *LATEX User's Guide*.

Immediately following this sentence is the point at which Table 1 is included in the input file; compare the placement of the table here with the table in the printed output of this document.

To set a wider table, which takes up the whole width of the page's live area, use the environment **table*** to enclose the table's contents and the table caption. As with a single-column table, this wide table will "float" to a location deemed more desirable. Immediately

Table 1. Frequency of Special Characters

Non-English or Math	Frequency	Comments
Ø	1 in 1,000	For Swedish names
π	1 in 5	Common in math
$	4 in 5	Used in business
Ψ_1^2	1 in 40,000	Unexplained usage

following this sentence is the point at which Table 2 is included in the input file; again, it is instructive to compare the placement of the table here with the table in the printed output of this document.

Always use midrule to separate table header rows from data rows, and use it only for this purpose. This enables assistive technologies to recognise table headers and support their users in navigating tables more easily.

11 MATH EQUATIONS

You may want to display math equations in three distinct styles: inline, numbered or non-numbered display. Each of the three are discussed in the next sections.

11.1 Inline (In-text) Equations

A formula that appears in the running text is called an inline or in-text formula. It is produced by the **math** environment, which can be invoked with the usual `\begin . . . \end` construction or with the short form `$ . . . $`. You can use any of the symbols and structures, from α to ω, available in LaTeX [Lamport 1986]; this section will simply show a few examples of in-text equations in context. Notice how this equation: $\lim_{n\to\infty} x = 0$, set here in in-line math style, looks slightly different when set in display style. (See next section).

11.2 Display Equations

A numbered display equation—one set off by vertical space from the text and centered horizontally—is produced by the **equation** environment. An unnumbered display equation is produced by the **displaymath** environment.

Again, in either environment, you can use any of the symbols and structures available in LaTeX; this section will just give a couple of examples of display equations in context. First, consider the equation, shown as an inline equation above:

$$\lim_{n\to\infty} x = 0 \tag{1}$$

Notice how it is formatted somewhat differently in the **displaymath** environment. Now, we'll enter an unnumbered equation:

$$\sum_{i=0}^{\infty} x + 1$$

and follow it with another numbered equation:

$$\sum_{i=0}^{\infty} x_i = \int_0^{\pi+2} f \tag{2}$$

just to demonstrate LaTeX's able handling of numbering.

12 FIGURES

The "`figure`" environment should be used for figures. One or more images can be placed within a figure. If your figure contains third-party material, you must clearly identify it as such, as shown in the example below.

Fig. 1. 1907 Franklin Model D roadster. Photograph by Harris & Ewing, Inc. [Public domain], via Wikimedia Commons. (https://goo.gl/VLCRBB).

Your figures should contain a caption which describes the figure to the reader.

Figure captions are placed *below* the figure.

Every figure should also have a figure description unless it is purely decorative. These descriptions convey what's in the image to someone who cannot see it. They are also used by search engine crawlers for indexing images, and when images cannot be loaded.

A figure description must be unformatted plain text less than 2000 characters long (including spaces). **Figure descriptions should not repeat the figure caption – their purpose is to capture important information that is not already provided in the caption or the main text of the paper.** For figures that convey important and complex new information, a short text description may not be adequate. More complex alternative descriptions can be placed in an appendix and referenced in a short figure description. For example, provide a data table capturing the information in a bar chart, or a structured list representing a graph. For additional information regarding how best to write figure descriptions and why doing this is so important, please see https://www.acm.org/publications/taps/describing-figures/.

12.1 The "Teaser Figure"

A "teaser figure" is an image, or set of images in one figure, that are placed after all author and affiliation information, and before the body of the article, spanning the page. If you wish to have such a figure in your article, place the command immediately before the `\maketitle` command:

```
\begin{teaserfigure}
```

Table 2. Some Typical Commands

Command	A Number	Comments
\author	100	Author
\table	300	For tables
\table*	400	For wider tables

```
    \includegraphics[width=\textwidth]{sampleteaser}
    \caption{figure caption}
    \Description{figure description}
  \end{teaserfigure}
```

13 CITATIONS AND BIBLIOGRAPHIES

The use of BibTEX for the preparation and formatting of one's references is strongly recommended. Authors' names should be complete — use full first names ("Donald E. Knuth") not initials ("D. E. Knuth") — and the salient identifying features of a reference should be included: title, year, volume, number, pages, article DOI, etc.

The bibliography is included in your source document with these two commands, placed just before the `\end{document}` command:

```
\bibliographystyle{ACM-Reference-Format}
\bibliography{bibfile}
```

where "`bibfile`" is the name, without the "`.bib`" suffix, of the BibTEX file.

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```
\citestyle{acmauthoryear}
```

Some examples. A paginated journal article [Abril and Plant 2007], an enumerated journal article [Cohen et al. 2007], a reference to an entire issue [Cohen 1996], a monograph (whole book) [Kosiur 2001], a monograph/whole book in a series (see 2a in spec. document) [Harel 1979], a divisible-book such as an anthology or compilation [Editor 2007] followed by the same example, however we only output the series if the volume number is given [Editor 2008] (so Editor00a's series should NOT be present since it has no vol. no.), a chapter in a divisible book [Spector 1990], a chapter in a divisible book in a series [Douglass et al. 1998], a multi-volume work as book [Knuth 1997], a couple of articles in a proceedings (of a conference, symposium, workshop for example) (paginated proceedings article) [Andler 1979; Hagerup et al. 1993], a proceedings article with all possible elements [Smith 2010], an example of an enumerated proceedings article [Gundy et al. 2007], an informally published work [Harel 1978], a couple of preprints [Anzaroot et al. 2014; Bornmann et al. 2019], a doctoral dissertation [Clarkson 1985], a master's thesis: [Anisi 2003], an online document / world wide web resource [Ablamowicz and Fauser 2007; Poker-Edge.Com 2006; Thornburg 2001], a video game (Case 1) [Obama 2008] and (Case 2) [Novak 2003] and [Lee 2005] and (Case 3) a patent [Scientist 2009], work accepted for publication [Rous 2008], 'YYYYb'-test for prolific author [Saeedi et al. 2010a] and [Saeedi et al. 2010b]. Other cites might contain 'duplicate' DOI and URLs (some SIAM articles) [Kirschmer and Voight 2010]. Boris / Barbara Beeton: multi-volume works as books [Hörmander 1985b] and [Hörmander 1985a]. A couple of citations with DOIs: [IEEE 2004; Kirschmer and Voight 2010]. Online citations: [Thornburg 2001; TUG 2017; Veytsman 2017]. Artifacts: [R Core Team 2019] and [Anzaroot and McCallum 2013].

14 ACKNOWLEDGMENTS

Identification of funding sources and other support, and thanks to individuals and groups that assisted in the research and the preparation of the work should be included in an acknowledgment section, which is placed just before the reference section in your document.

This section has a special environment:

```
\begin{acks}
...
\end{acks}
```

so that the information contained therein can be more easily collected during the article metadata extraction phase, and to ensure consistency in the spelling of the section heading.

Authors should not prepare this section as a numbered or unnumbered `\section`; please use the "`acks`" environment.

15 APPENDICES

If your work needs an appendix, add it before the "`\end{document}`" command at the conclusion of your source document.

Start the appendix with the "`appendix`" command:

```
\appendix
```

and note that in the appendix, sections are lettered, not numbered. This document has two appendices, demonstrating the section and subsection identification method.

16 MULTI-LANGUAGE PAPERS

Papers may be written in languages other than English or include titles, subtitles, keywords and abstracts in different languages (as a rule, a paper in a language other than English should include an English title and an English abstract). Use `language=...` for every language used in the paper. The last language indicated is the main language of the paper. For example, a French paper with additional titles and abstracts in English and German may start with the following command

```
\documentclass[sigconf, language=english, language=german,
               language=french]{acmart}
```

The title, subtitle, keywords and abstract will be typeset in the main language of the paper. The commands `\translatedXXX`, `XXX` begin title, subtitle and keywords, can be used to set these elements in the other languages. The environment `translatedabstract` is

used to set the translation of the abstract. These commands and environment have a mandatory first argument: the language of the second argument. See `sample-sigconf-i13n.tex` file for examples of their usage.

17 SIGCHI EXTENDED ABSTRACTS

The "`sigchi-a`" template style (available only in LaTeX and not in Word) produces a landscape-orientation formatted article, with a wide left margin. Three environments are available for use with the "`sigchi-a`" template style, and produce formatted output in the margin:

`sidebar`: Place formatted text in the margin.
`marginfigure`: Place a figure in the margin.
`margintable`: Place a table in the margin.

ACKNOWLEDGMENTS

To Robert, for the bagels and explaining CMYK and color spaces.

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A RESEARCH METHODS

A.1 Part One

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Morbi malesuada, quam in pulvinar varius, metus nunc fermentum urna, id sollicitudin purus odio sit amet enim. Aliquam ullamcorper eu ipsum vel mollis. Curabitur quis dictum nisl. Phasellus vel semper risus, et lacinia dolor. Integer ultricies commodo sem nec semper.

A.2 Part Two

Etiam commodo feugiat nisl pulvinar pellentesque. Etiam auctor sodales ligula, non varius nibh pulvinar semper. Suspendisse nec lectus non ipsum convallis congue hendrerit vitae sapien. Donec at laoreet eros. Vivamus non purus placerat, scelerisque diam eu, cursus ante. Etiam aliquam tortor auctor efficitur mattis.

B ONLINE RESOURCES

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