Trajectory prediction

firstname lastname
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ABSTRACT

INTRODUCTION

This template should provide you some hints on preparing the reports. It is based on the template as provided by ACM[1].

When you submit the report, indicate who is responsible for a particular phase (either add the name to the section heading of the phase or add a section indicating all the phase responsibles).

Remove the irrelevant sections before submission. Your submission for phase 1 should only contain the first section (Problem Statement) and References (and potentially the abstract). Extend the document for the further phases, i.e. the submission for phase 2 should contain section 1 (Problem Statement) and 2 (Data Acquisition) and so on.

Submit the pdf version of your report to all tutors via e-mail:

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1 PROBLEM STATEMENT

Describe your problem statement clearly and short. Your algorithm will most likely not bring world-peace, but solve a particular problem. Narrow down your problem to be as specific as possible. The more specific your problem, the better the chance to find a suitable solution. After a solution is found, the complexity can still be increased. For example "the beer price is too high, we aim to reduce it" is not a very precise problem statement. What is "too high"? Which kind of beer? At which area/country? At which occasion (restaurant,supermarket,special event,etc.)? ...?

Besides the problem statement, you should also indicate your approach on how you plan to solve it and how you plan to evaluate your solution in this section.

Most likely, the problem you are going to address is not completely new, but at least a similar problem has previously been addressed by others already. Therefore, research how others solved this or similar problems, i.e. get familiar with the state of the art and related work. You may then apply (and adapt/extend) an existing solution to a similar problem to your problem at hand.

2 DATA ACQUISITION & PRE-PROCESSING

Make sure to precisely describe what you did and why. The reader of your report should be able to reproduce the steps. Therefore, it is for example not sufficient if you write "we tokenized the sentences". You need to describe how the tokenization was done exactly, i.e. which regular expression or library/method you used with which parameters.

Frameworks/libraries are mentioned in footnotes instead of in the references section. For example "we used the *TweetTokenizer* from the NLTK[2] toolkit with the default parameters to tokenize our tweets".

Reasoning is highly important. It should be obvious to the reader, why you do something in a particular way. The following subsections provide hints on what to include in your report.

(!) required (*) if it applies to your project

2.1 Data acquisition

- source of data (!)
- means of acquisition (!)
- reasoning (!) (i.e. why you chose that kind of data, that source, why you crawled it in that way, etc.)

As the datasets are mostly pre-defined (i.e. in most of the topics you do not need to acquire the data yourself), this part can be short.

2.2 Data preprocessing

- filtering / grouping / labeling (*)
- lemmatization/stemming (*)
- other (*)
- statistics on the data (!) (e.g. volume, classes, distributions, correlations, etc.)
- reasoning (!)

2.3 Feature engineering

- input x and output y of the system (*)
- feature extraction (*)
- feature transformation (*)
- reasoning (!)

3 MODEL IMPLEMENATION

3.1 Methodology / Proposed solution / Technique

An in-depth description of your solution to the problem. (e.g. input - output, system description, ML techniques, etc.)

3.2 Experimental Setup

An in-depth description of the experimental design which enables an objective quantification of the quality of your solution. (e.g.

[1] https://www.acm.org/publications/proceedings-template

[2] https://www.nltk.org/api/nltk.tokenize.html

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

dataset, baselines, metrics, etc.). Might be moved to the next section (Phase 4).

4 EVALUATION

4.1 Results

The evaluation of your solution by means of the experiments. Figures and statistics provide hard facts about the quality of your solution from different viewpoints.

4.2 Discussion

So what? How well could we solve the problem? What are the limitations? Open ends.

TEMPLATE INFORMATION (REMOVE THIS SECTION IN YOUR REPORT)

Instructions in the following sections are included from the original ACM template sample file. The article template's documentation, available at https://www.acm.org/publications/proceedings-template, has a complete explanation and tips for effective use.

Sectioning Commands

Your work should use standard LaTeX sectioning commands: `section`, `subsection`, `subsubsection`, and `paragraph`.

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 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.

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.

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 [20]; 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).

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.

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.

Your figures should contain a caption which describes the figure to the reader. Figure captions are placed *below* the figure.

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}
```

Table 2: Some Typical Commands

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

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

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

Some examples. A paginated journal article [2], an enumerated journal article [7], a reference to an entire issue [6], a monograph (whole book) [19], a monograph/whole book in a series (see 2a in spec. document) [13], a divisible-book such as an anthology or compilation [9] followed by the same example, however we only output the series if the volume number is given [10] (so Editor00a's series should NOT be present since it has no vol. no.), a chapter in a divisible book [30], a chapter in a divisible book in a series [8], a multi-volume work as book [18], an article in a proceedings (of a conference, symposium, workshop for example) (paginated proceedings article) [3], a proceedings article with all possible elements [29], an example of an enumerated proceedings article [11], an informally published work [12], a doctoral dissertation [5], a master's thesis: [4], an online document / world wide web resource [1, 24, 31], a video game (Case 1) [23] and (Case 2) [22] and [21] and (Case 3) a patent [28], work accepted for publication [25], 'YYYYb'-test for prolific author [26] and [27]. Other cites might contain 'duplicate' DOI and URLs (some SIAM articles) [17]. Boris / Barbara Beeton: multi-volume works as books [15] and [14]. A couple of citations with DOIs: [16, 17]. Online citations: [31–33].

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.

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A RESEARCH METHODS (REMOVE IF NOT USED)

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

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B ONLINE RESOURCES

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Nam interdum magna at lectus dignissim, ac dignissim lorem rhoncus. Maecenas eu arcu ac neque placerat aliquam. Nunc pulvinar massa et mattis lacinia.