F-VICE: Forecasting Velocity of Ice in Glaciers Using Machine Learning

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Figure 1: Seattle Mariners at Spring Training, 2010.

Abstract

El deshielo de los glaciares es un fenómeno natural que ha aumentado en las últimas décadas debido al cambio climático. Este proceso tiene un impacto significativo en el nivel del mar y en los ecosistemas locales. En este trabajo, proponemos un enfoque basado en aprendizaje automático para predecir la serie de tiempo de la velocidad de deshielo de los glaciares. Utilizamos un conjunto de datos del proyecto ITS_LIVE del Jet Propulsion Laboratory de la NASA, que a partir de imágenes satelitales, proporciona información sobre la velocidad de deshielo de los glaciares. Finalmente comparamos los resultados de distintos modelos de aprendizaje automático y discutimos los resultados obtenidos.

Keywords

Deshielo, Glaciares, Aprendizaje Automático, Predicción, Cambio Climático

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1 Introduction

La predicción de series de tiempo es una tarea importante en el ámbito del aprendizaje automático y la ciencia de datos. Desde la predicción de precios de acciones hasta la predicción del clima, las series de tiempo son una herramienta valiosa para la toma de decisiones y la planificación. En este trabajo, nos enfocamos en la predicción de la velocidad de deshielo de los glaciares, un fenómeno natural que ha aumentado en las últimas décadas debido al cambio climático.

ACM's consolidated article template, introduced in 2017, provides a consistent LaTeX style for use across ACM publications, and incorporates accessibility and metadata-extraction functionality necessary for future Digital Library endeavors. Numerous ACM and SIG-specific LaTeX templates have been examined, and their unique features incorporated into this single new template.

If you are new to publishing with ACM, this document is a valuable guide to the process of preparing your work for publication. If you have published with ACM before, this document provides insight and instruction into more recent changes to the article template.

The "`acmart`" document class can be used to prepare articles for any ACM publication — conference or journal,

and for any stage of publication, from review to final "camera-ready" copy, to the author's own version, with *very* few changes to the source.

2 Antecedentes

Distintos estudios han demostrado que el deshielo de los glaciares es un fenómeno natural que ha aumentado en las últimas décadas debido al cambio climático. Este proceso tiene un impacto significativo en el nivel del mar y en los ecosistemas locales. Por lo tanto, es importante contar con herramientas que permitan predecir la velocidad de deshielo de los glaciares para poder tomar decisiones informadas y planificar acciones para mitigar los efectos del cambio climático.

As noted in the introduction, the "`acmart`" document class can be used to prepare many different kinds of documentation — a double-anonymous initial submission of a full-length technical paper, a two-page SIGGRAPH Emerging Technologies abstract, a "camera-ready" journal article, a SIGCHI Extended Abstract, and more — all by selecting the appropriate *template style* and *template parameters*.

This document will explain the major features of the document class. For further information, the *LaTeX User's Guide* is available from https://www.acm.org/publications/proceedings-template.

2.1 Template Styles

The primary parameter given to the "`acmart`" document class is the *template style* which corresponds to the kind of publication or SIG publishing the work. This parameter is enclosed in square brackets and is a part of the `documentclass` command:

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\documentclass[STYLE]{acmart}
```

Journals use one of three template styles. All but three ACM journals use the `acmsmall` template style:

- `acmsmall`: The default journal template style.
- `acmlarge`: Used by JOCCH and TAP.
- `acmtog`: Used by TOG.

The majority of conference proceedings documentation will use the `acmconf` template style.

- `sigconf`: The default proceedings template style.
- `sigchi`: Used for SIGCHI conference articles.
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2.2 Template Parameters

In addition to specifying the *template style* to be used in formatting your work, there are a number of *template parameters* which modify some part of the applied template style. A complete list of these parameters can be found in the *LaTeX User's Guide.*

Frequently-used parameters, or combinations of parameters, include:

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- `authorversion`: Produces a version of the work suitable for posting by the author.
- `screen`: Produces colored hyperlinks.

This document uses the following string as the first command in the source file:

```
\documentclass[sigconf]{acmart}
```

3 Metodología

Modifying the template — including but not limited to: adjusting margins, typeface sizes, line spacing, paragraph and list definitions, and the use of the `\vspace` command to manually adjust the vertical spacing between elements of your work — is not allowed.

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4 Experimentos y Resultados

The "`acmart`" document class requires the use of the "Libertine" typeface family. Your TEX installation should include this set of packages. Please do not substitute other typefaces. The "`lmodern`" and "`ltimes`" packages should not be used, as they will override the built-in typeface families.

5 Conclusiones

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```
\title[short title]{full title}
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