

análisis y comportamiento predictivo mediante Aprendizaje Automático en sondeos eléctricos verticales, aplicación en adquisición de datos

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Resumen

Propósito: Durante el proceso de adquisición de datos geolétricos, se pueden presentar anomalías, ya sean errores de medición, error de muestreo, ruido ambiental, efectos de sitio, etc., esta publicación tiene por finalidad generar un algoritmo de Aprendizaje Automático que permita identificar error en etapas tempranas de adquisición así como una pre-interpretación de unidades saturadas, con la finalidad de reducir las incertidumbre, mejorando la calidad de los datos y dar la oportunidad al operador de corregirlos al momento, así como generar una alerta temprana de unidades saturadas con el objetivo de ampliar la resolución de la unidad en cuestión con el objeto de obtener mayor detalle de estas zonas de interés.

Keywords: Resistividad Aparente, Keyword2, Keyword3, Keyword4

1. Introducción

que es el ML.... como se aplica a la Geofísica... como se emplea en Geoelectrica... con respecto a la prospección Geoelectrica mediante Sondeos Eléctricos Verticales, no se aplican técnicas de ML en el proceso de adquisición de datos, esta tarea se relega al uso de software especializado, que realiza regresiones logarítmicas condicionadas a la física de dispersión donde una corriente eléctrica fluye en uno o varios medios geológicos/estructurales; el emplear ML en la etapa de adquisición es una oportunidad para mejorar la densidad de información en los niveles, profundidad, que se requiera

mayor resolución, mejorando la calidad en consecuencia obtener una mejor inversión de datos.

2. Objetivos

■

3. Metodología

3.1. Estadística descriptiva

3.2. Aplicación de ML

Sample body

4. Resultados

5. Discucion

6. Algorithms, Program codes and Listings

Packages `algorithm`, `algorithmicx` and `algpseudocode` are used for setting algorithms in L^AT_EX using the format:

```
\begin{algorithm}
\caption{<alg-caption>}\label{<alg-label>}
\begin{algorithmic}[1]
. . .
\end{algorithmic}
\end{algorithm}
```

You may refer above listed package documentations for more details before setting `algorithm` environment. For program codes, the “`verbatim`” package is required and the command to be used is `\begin{verbatim} ... \end{verbatim}`.

Similarly, for `listings`, use the `listings` package. `\begin{lstlisting} ... \end{lstlisting}` is used to set environments similar to `verbatim` environment. Refer to the `lstlisting` package documentation for more details.

A fast exponentiation procedure:

```
begin
  for  $i := 1$  to 10 step 1 do
     $\text{expt}(2, i)$ ;
     $\text{newline}()$  od
where
proc  $\text{expt}(x, n) \equiv$ 
   $z := 1$ ;
  do if  $n = 0$  then exit fi;
```

Comments will be set flush to the right margin

```

do if odd( $n$ ) then exit fi;
  comment: This is a comment statement;
   $n := n/2$ ;  $x := x * x$  od;
{  $n > 0$  };
 $n := n - 1$ ;  $z := z * x$  od;
print( $z$ ).
end

```

Algorithm 1 Calculate $y = x^n$

Require: $n \geq 0 \vee x \neq 0$

Ensure: $y = x^n$

```

1:  $y \leftarrow 1$ 
2: if  $n < 0$  then
3:    $X \leftarrow 1/x$ 
4:    $N \leftarrow -n$ 
5: else
6:    $X \leftarrow x$ 
7:    $N \leftarrow n$ 
8: end if
9: while  $N \neq 0$  do
10:  if  $N$  is even then
11:     $X \leftarrow X \times X$ 
12:     $N \leftarrow N/2$ 
13:  else[ $N$  is odd]
14:     $y \leftarrow y \times X$ 
15:     $N \leftarrow N - 1$ 
16:  end if
17: end while

```

```

for  $i := \text{maxint}$  to 0 do
begin
{ do nothing }
end;
Write( 'Case-insensitive- ');
Write( 'Pascal-keywords. ');

```

6.1. Details on reference citations

Standard L^AT_EX permits only numerical citations. To support both numerical and author-year citations this template uses `natbib` L^AT_EX package. For style guidance please refer to the template user manual.

Here is an example for `\cite{...}`: [?]. Another example for `\citep{...}`: [?]. For author-year citation mode, `\cite{...}` prints Jones et al. (1990) and `\citep{...}` prints (Jones et al., 1990).

All cited bib entries are printed at the end of this article: [?], [?], [?], [?], [?], [?], [?], [?], [?], [?] and [?].

7. Discussion

Discussions should be brief and focused. In some disciplines use of Discussion or ‘Conclusion’ is interchangeable. It is not mandatory to use both. Some journals prefer a section ‘Results and Discussion’ followed by a section ‘Conclusion’. Please refer to Journal-level guidance for any specific requirements.

8. Conclusion

Conclusions may be used to restate your hypothesis or research question, restate your major findings, explain the relevance and the added value of your work, highlight any limitations of your study, describe future directions for research and recommendations.

In some disciplines use of Discussion or ‘Conclusion’ is interchangeable. It is not mandatory to use both. Please refer to Journal-level guidance for any specific requirements.

Supplementary information. If your article has accompanying supplementary file/s please state so here.

Authors reporting data from electrophoretic gels and blots should supply the full unprocessed scans for key as part of their Supplementary information. This may be requested by the editorial team/s if it is missing.

Please refer to Journal-level guidance for any specific requirements.

Acknowledgments. Acknowledgments are not compulsory. Where included they should be brief. Grant or contribution numbers may be acknowledged.

Please refer to Journal-level guidance for any specific requirements.

Declarations

Some journals require declarations to be submitted in a standardised format. Please check the Instructions for Authors of the journal to which you are submitting to see if you need to complete this section. If yes, your manuscript must contain the following sections under the heading ‘Declarations’:

- Funding
- Conflict of interest/Competing interests (check journal-specific guidelines for which heading to use)
- Ethics approval
- Consent to participate
- Consent for publication

- Availability of data and materials
- Code availability
- Authors' contributions

If any of the sections are not relevant to your manuscript, please include the heading and write 'Not applicable' for that section.

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Apéndice A Section title of first appendix

An appendix contains supplementary information that is not an essential part of the text itself but which may be helpful in providing a more comprehensive understanding of the research problem or it is information that is too cumbersome to be included in the body of the paper.