

# Linguística Computacional: Problemas, Tendências e Desafios

Evandro L.T. Paradela Cunha  
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Steven Vaughan-Nichols

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Translate

From: English

To: French

Translate

English

Spanish

French

It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us, we were all going direct to heaven, we were all going direct the other way - in short, the period was so far like the present period, that some of its noisiest authorities insisted on its being received, for good or for evil, in the superlative degree of comparison only.

French

English

Spanish

Il était le meilleur des cas, il était le pire des temps, c'était l'âge de la sagesse, c'était l'âge de la folie, c'était l'époque de la croyance, c'était l'époque de l'incrédulité, c'était la saison de la lumière, il a été la saison des ténèbres, c'était le printemps de l'espoir, c'était l'hiver du désespoir, nous avions tout ce dont nous sommes saisis, nous n'avions rien devant nous, nous étions tous d'aller directement au ciel, nous allions tous directement dans l'autre sens - en bref, la période était si loin comme la période actuelle, que certains de ses plus bruyants autorités ont insisté sur son reçu, pour le meilleur ou pour le mal, dans le degré superlatif de comparaison seulement.

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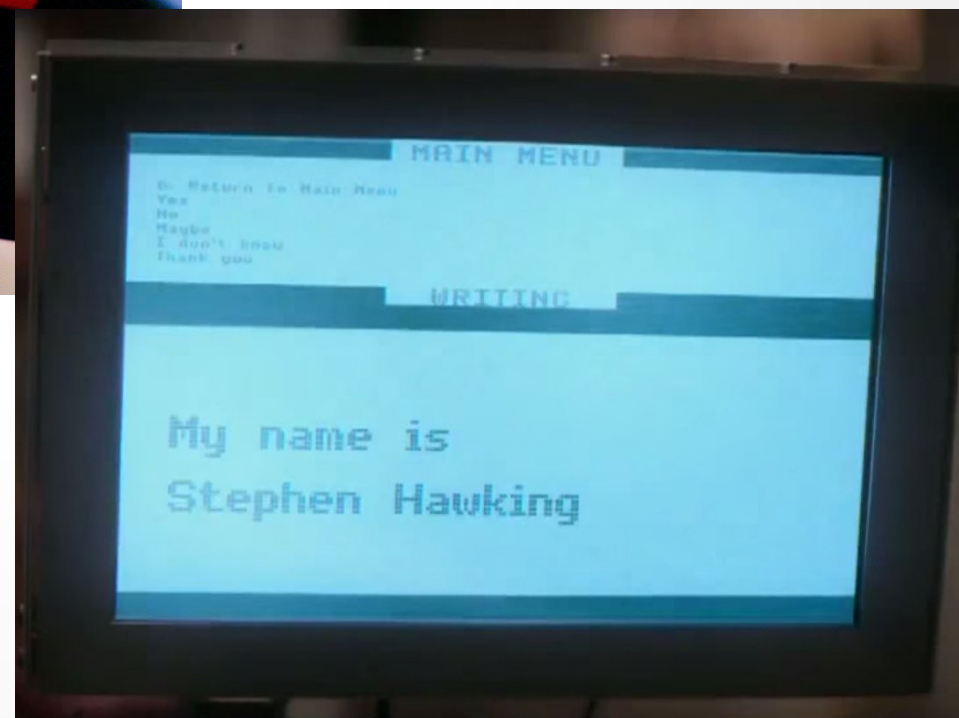
## Revisiting the concept of preparation for oxidative stress in hypoxia-tolerant animals

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The role of reactive oxygen species (ROS) and antioxidants as part of the survival machinery during episodes of hypoxia exposure in hypoxia-tolerant animals has been under investigation for the past twenty years. One of the fundamental adaptations is the capacity to modulate the antioxidant apparatus during exposure to low oxygen tensions. This mechanism, coined “preparation for oxidative stress”, was considered a form of prevention against a rise in ROS formation following reoxygenation [1-3]. This mechanism was proposed after the observation that many animal species, ranging from crustaceans and gastropods to vertebrates, are able to increase the activity (and/or expression) of antioxidant enzymes during hypoxia/anoxia exposure. Some examples from the literature [3,4] are presented herein. Exposure of amphipods Monoporeia affinis to hypoxia for 5 or 9 days induced a rise in the activities of catalase and SOD. Crabs Chasmagnathus granulata under anoxia exposure (for 8 h) presented increased catalase and glutathione S-transferase activities in gills. A study with barnacles (Balanus amphitrite) under 24 h anoxia or hypoxia exposure showed increased catalase and SOD activities in both larvae and adults. Pacific oysters Crassostrea gigas under hypoxia (3 to 24 days) presented increased expression (mRNA) for glutathione peroxidase (GPX) in mantle, gill and hepatopancreas. In the disc abalone Haliotis discus, hypoxia (up to 24 h) prompted increased levels of





- Mecanismo de busca
- Tradutor automático
- Corretor ortográfico e gramatical
- Sistema de comunicação baseado no computador (previsão de texto + sintetizador de fala)

**O que essas tecnologias têm em comum?**

Todas elas relacionam  
**língua e computação**

# Definição

- Linguística computacional é:
  - um campo multidisciplinar
  - interessado na modelagem da linguagem natural
  - a partir de uma perspectiva computacional



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# Um pouco de história...



Anos 50



“Primeiros” computadores



Guerra Fria

# Um pouco de história...

- Tradução automática
  - sobretudo de textos científicos russos para o inglês
- O grande erro:
  - acreditar que os cálculos aritméticos que os computadores conseguiam fazer seriam suficientes para traduzir textos complexos

# Tradução automática

The screenshot shows the Google Translate website in a Google Chrome browser. The address bar shows 'translate.google.com'. The page has a header with the Google logo, a user profile for 'Steven Vaughan-Nichols', and a share button. Below the header, there's a 'Translate' section with dropdown menus for 'From: English' and 'To: French', and a 'Translate' button. The main content area shows the English text on the left and the French translation on the right. The English text is: 'It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us, we were all going direct to heaven, we were all going direct the other way - in short, the period was so far like the present period, that some of its noisiest authorities insisted on its being received, for good or for evil, in the superlative degree of comparison only.' The French translation is: 'Il était le meilleur des cas, il était le pire des temps, c'était l'âge de la sagesse, c'était l'âge de la folie, c'était l'époque de la croyance, c'était l'époque de l'incrédulité, c'était la saison de la lumière, il a été la saison des ténèbres, c'était le printemps de l'espoir, c'était l'hiver du désespoir, nous avions tout ce dont nous sommes saisis, nous n'avions rien devant nous, nous étions tous d'aller directement au ciel, nous allions tous directement dans l'autre sens - en bref, la période était si loin comme la période actuelle, que certains de ses plus bruyants autorités ont insisté sur son reçu, pour le meilleur ou pour le mal, dans le degré superlatif de comparaison seulement.' At the bottom, there are links for 'Google Translate for Business', 'Translator Toolkit', 'Website Translator', and 'Global Market Finder'. The footer contains links for 'Turn off instant translation', 'About Google Translate', 'Mobile', 'Privacy', 'Help', and 'Send feedback'.

Google Translate - Google Chrome

translate.google.com

Google

Steven Vaughan-Nichols 13 + Share

Translate

From: English To: French Translate

English Spanish French

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French English Spanish

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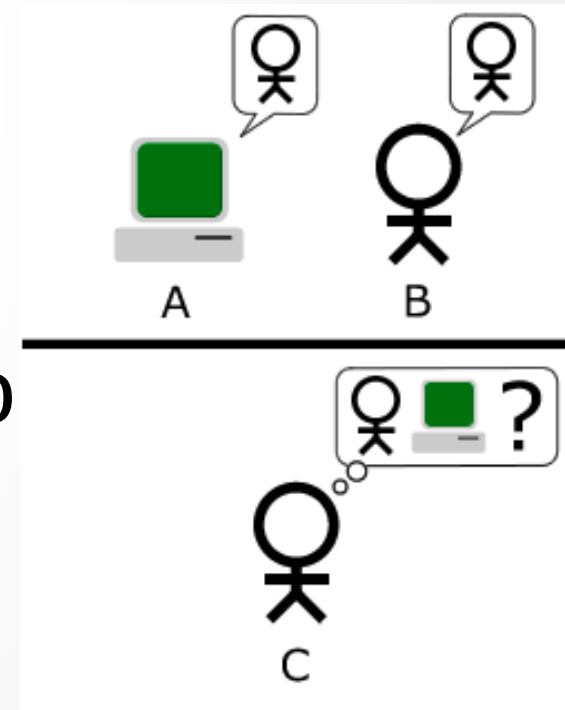
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# Agentes conversacionais

- *Chatbot* = chat + robot
  - “comum” em lojas, empresas etc.
- Teste de Turing
  - testa a capacidade de uma máquina exibir comportamento equivalente a um ser humano



# Processamento de texto

- Corretores gramaticais e ortográficos
- Sumarizadores de texto

# Linguística forense computacional

- Detecção de plágio
- Identificação de autoria de textos

# Interação humano-computador

- Sintetização de voz
- Reconhecimento de fala

# Reconhecimento de caracteres

- OCR = *Optical Character Recognition*

The screenshot displays the 'AUSTRALIAN NEWSPAPERS beta' website interface. The top navigation bar includes links for Home, About Us, Browse, Help, Feedback, and Logout, along with a search bar and a 'Search Articles' button. The main header identifies the document as 'The Sydney Gazette and New South Wales Advertiser' from Saturday 5 March 1803, Page 1 of 4.

On the left side, there is a sidebar with various tools and information:

- Buttons for Print, Save as PDF, and Save as Image.
- A URL field showing 'http://nla.gov.au/nla.news-article625439'.
- A 'Tags (Keywords)' section with links for colonial news, Government notice, Norfolk Island 1st Settlement, NSW Corps, Orphan Fund, and Robert Campbell.
- A 'Comments' section indicating 'No comments yet.' and a button to 'Add New Comment'.
- An 'ELECTRONICALLY TRANSLATED TEXT' section with a link to 'Why may this text have mistakes?' and a 'Help fix this text!' button.
- A 'Text' section showing the OCR output, with corrections made by Stephen J. Arnold.

The main content area is split into two columns:

- The left column shows the OCR text for 'General Orders.' It includes a paragraph about 'REPEATED Complaints' and a section for 'General Orders.' The text is partially highlighted in blue and yellow, indicating areas of interest or correction.
- The right column shows the original scanned image of the newspaper page, with the same text visible but in a more legible, high-contrast format.

At the bottom right, there is a 'ZOOM' control with a slider and buttons for zooming in and out.

# Aplicações para pesquisa linguística

- Estemização

- “jogadores” ---> “jog”

- Lematização

- “jogadores” ---> “jogador”



# Carreira

- Pesquisa acadêmica
- Desenvolvimento de software
  - Google, Microsoft, Yahoo, Apple etc.
- Aplicações Web
- Desenvolvimento de hardware

# Obrigado!



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