

# ¿Cómo funciona ChatGPT?

Coordinación de Ciencia de Datos



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Si todo sale bien estrenamos carrera de Ingeniería en Ciencia de Datos en la Ibero



Figure 1: Generado con stable diffusion.

Hay funciones matemáticas que  
permiten representar cualquier cosa

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Figure 2: (“An Interactive Introduction to Fourier Transforms” n.d.)



Figure 3: (“An Interactive Introduction to Fourier Transforms” n.d.)



**Figure 4:** (“An Interactive Introduction to Fourier Transforms” n.d.)



Figure 5: (“An Interactive Introduction to Fourier Transforms” n.d.)



Figure 6: (“An Interactive Introduction to Fourier Transforms” n.d.)



## Podemos pensar en el aprendizaje de máquina como un nuevo paradigma para programar usando (Karpathy 2021, 2017)

- La arquitectura define las capacidades de aprendizaje.

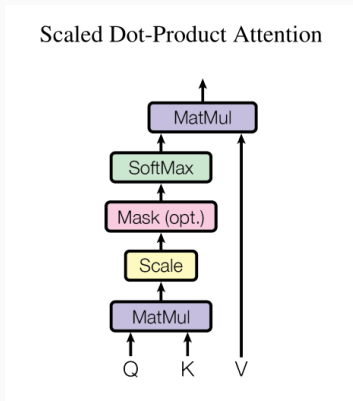


Figure 7: (Ashish Vaswani et al. 2017)

# Podemos pensar en el aprendizaje de máquina como un nuevo paradigma para programar usando (Karpathy 2021, 2017)

- La arquitectura define las capacidades de aprendizaje.
- El algoritmo de aprendizaje permite usar ejemplos para aprender.

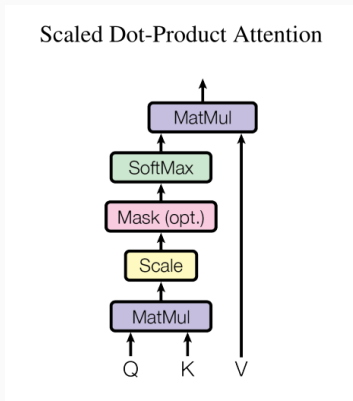


Figure 7: (Ashish Vaswani et al. 2017)

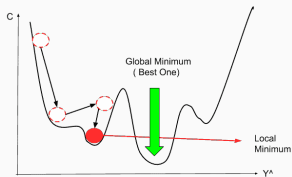


Figure 8: (aq sazafar 2020)

# ChatGPT aprende la estructura de las palabras que van juntas en un conjunto de datos.

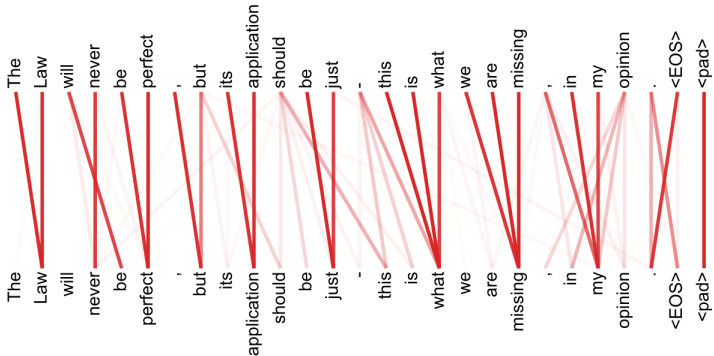


Figure 5: Many of the attention heads exhibit behaviour that seems related to the structure of the sentence. We give two such examples above, from two different heads from the encoder self-attention at layer 5 of 6. The heads clearly learned to perform different tasks.

Figure 9: (Ashish Vaswani et al. 2017)

## Attention Visualizations

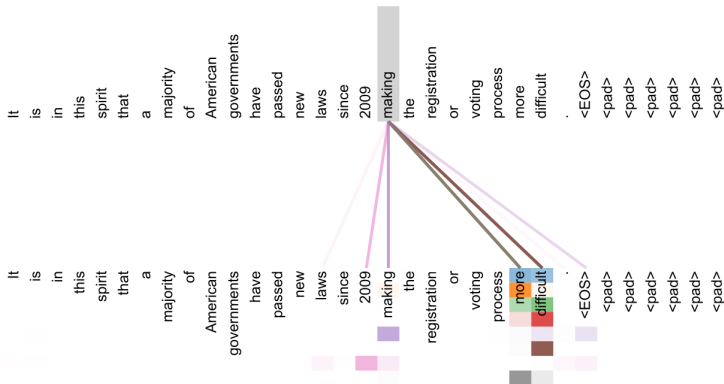


Figure 3: An example of the attention mechanism following long-distance dependencies in the encoder self-attention in layer 5 of 6. Many of the attention heads attend to a distant dependency of the verb 'making', completing the phrase 'making...more difficult'. Attentions here shown only for the word 'making'. Different colors represent different heads. Best viewed in color.

Figure 10: (Ashish Vaswani et al. 2017)

# Y finalmente se entrenó para seguir instrucciones

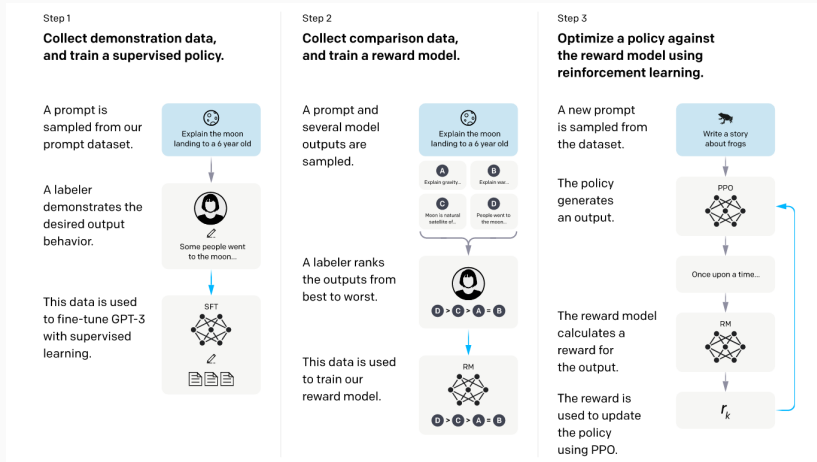


Figure 11: (Long Ouyang et al. 2022)

Aunque sepa qué cosas suelen ir juntas, no sabe qué cosas son ciertas

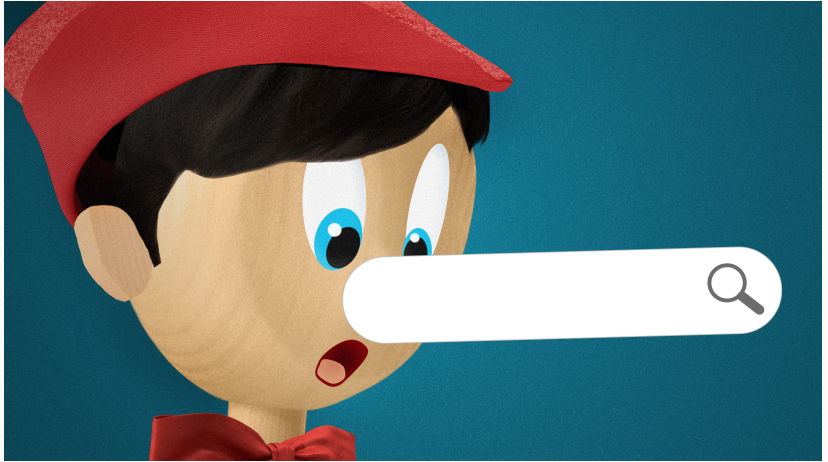


Figure 12: (MIT Technology Review 2023)

Si quieren saber más

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