



universidade
de aveiro

Representar como relevo o nível cinzento das imagens

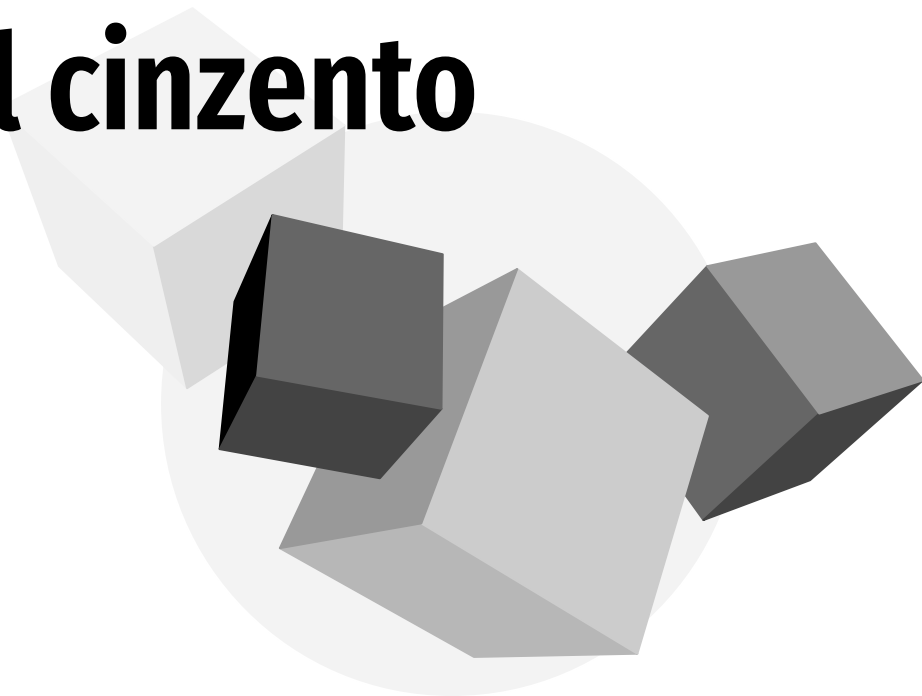
Introdução à Computação Gráfica

Docente Joaquim Madeira

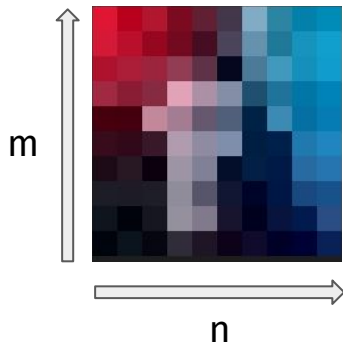
2021/2022

João Reis, 98474

<https://greylevel.netlify.app/>



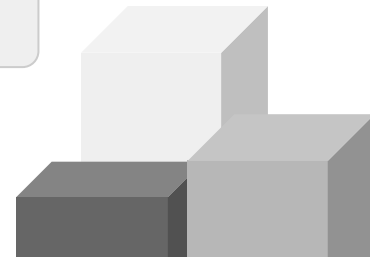
Definição do Tema



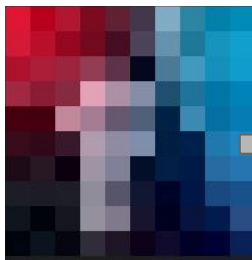
- ⇒ Calcular o nível de cinzento de cada pixel
- ⇒ Representá-lo na forma de um paralelepípedo com a altura proporcional ao seu nível de cinzento
- ⇒ Colorir cada paralelepípedo de acordo com o tom de cinzento correspondente

Grey level = $0.299 * \text{red component} + 0.587 * \text{green component} + 0.114 * \text{blue component}$

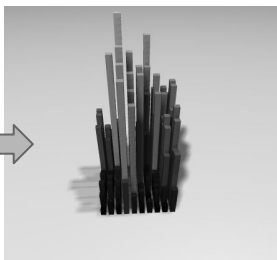
[fonte] <https://www.stemmer-imaging.com/en/knowledge-base/grey-level-grey-value/>



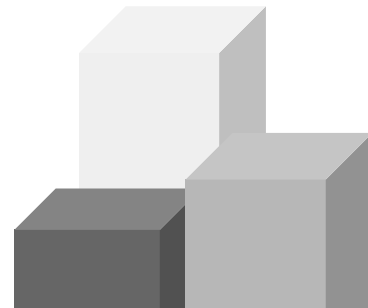
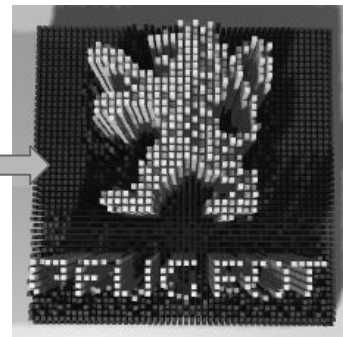
Definição do Tema: Exemplos



10x10

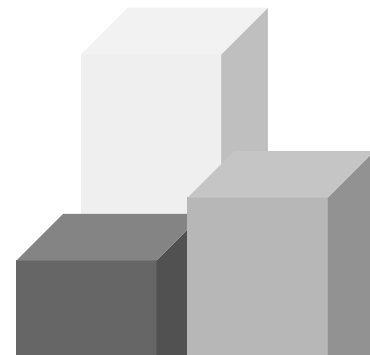
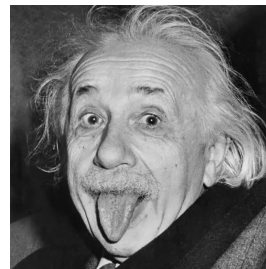


50x50

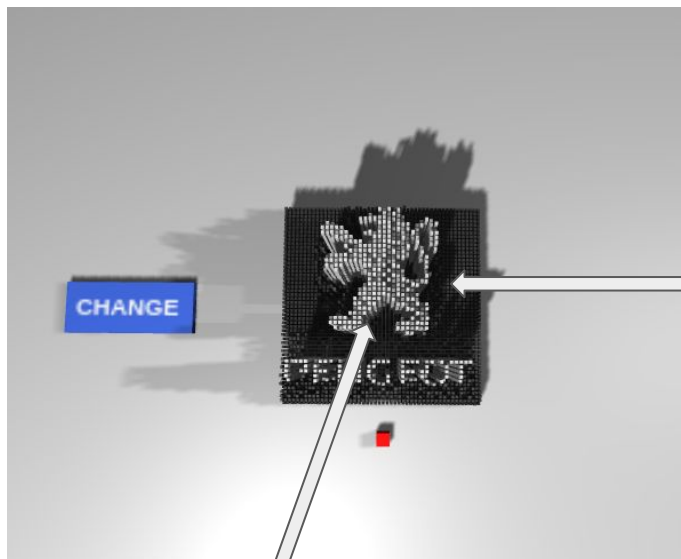




Definição do Tema: Imagens Utilizadas



Iluminação e Sombras

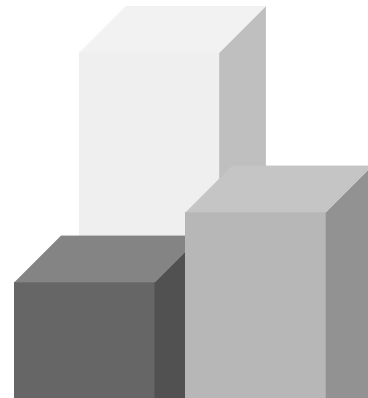


Spotlight (0.8)

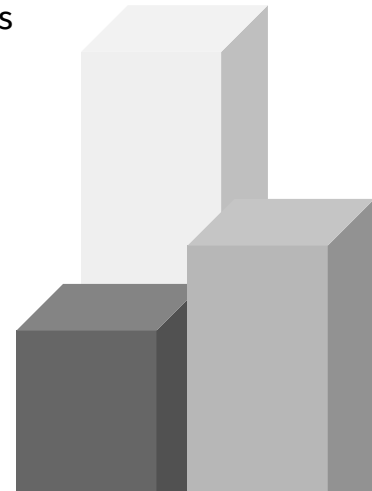
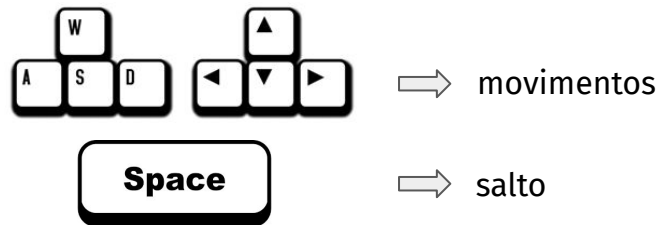
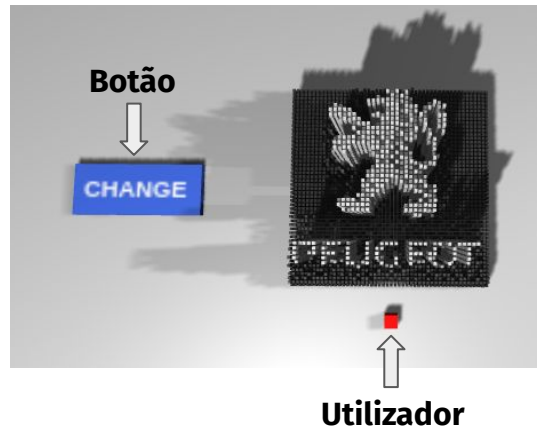


AmbientLight (0.2)

Spotlight2 (0.3)

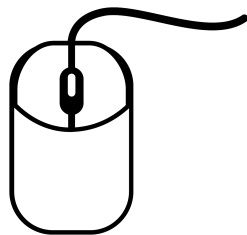


Interações com o utilizador: Teclado





Interações com o utilizador: Rato

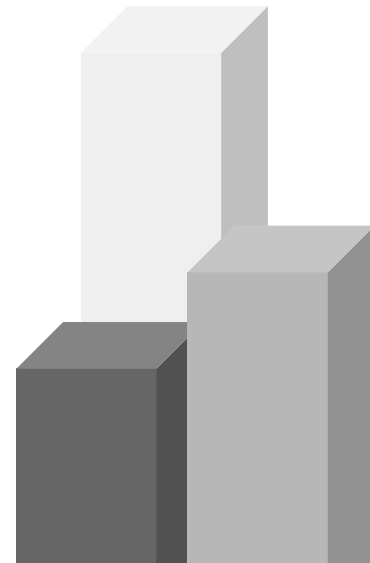


Orbit controls

(permite que a câmara orbite em torno de um alvo)



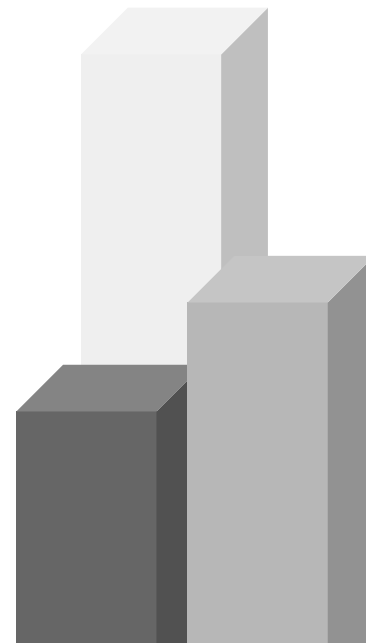
Alterar o tamanho da janela





Animações

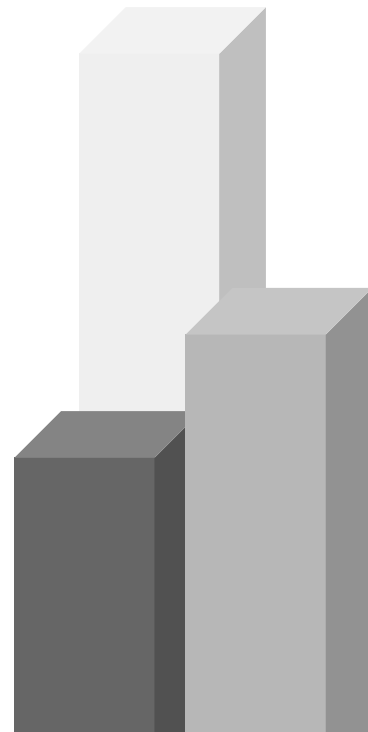
1. Salto
2. Botão pressionado (ao saltar em cima do mesmo)
3. Morphing entre duas imagens (paralelepípedos alteram gradualmente a sua altura na mudança de uma imagem para outra)





Extras

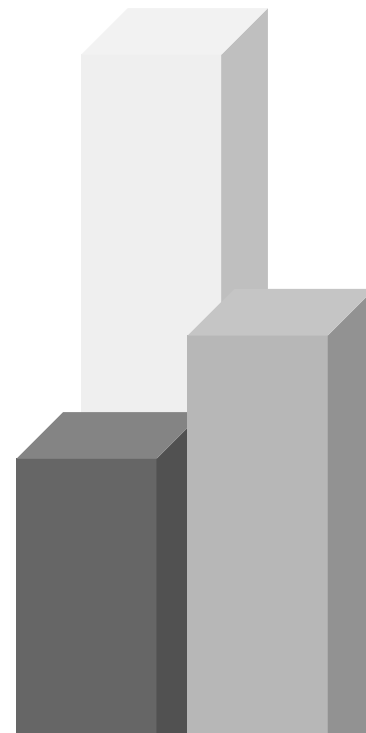
1. Som de “click” no botão (após ser pressionado)
2. Utilização de texturas





Problemas e Dificuldades

1. Colocar texto (solução: utilização de texturas)
2. Fazer a animação do morphing entre imagens





DEMONSTRATION

[demo] <https://greylevel.netlify.app/>

[code] <https://github.com/joaoreis16/ICG/tree/main/projeto1>

