Processamento de Imagem e Visão

Licenciatura de Engenharia Informática e Multimédia

5º Semestre

Docentes:

Pedro Mendes Jorge	**Edifício C, Gabinete C.1.5.3**	**pjorge@deetc.isel.pt**
André Lourenço	**Edifício C, Gabinete C.2.4**	**alourenco@deetc.isel.pt**

Programa

- Capítulo 1 – Introdução
- Capítulo 2 – Fundamentos
- Capítulo 3 – Análise de Imagens Binárias
- Capítulo 4 – Conceitos de Reconhecimento de Padrões
- Capítulo 5 – Pré-Processamento de Imagem
- Capítulo 6 – Extracção de cor e textura
- Capítulo 7 – Análise de Movimento
- Capítulo 8 – Segmentação de imagem
- Capítulo 9 – Geometria Projectiva

Avaliação

- Componente Teórica (45%): Teste final;
- Componente Laboratorial (40%): 2 Projetos laboratoriais;

  Nota mínima nas componentes teórica e laboratorial: 9,5 valores;

- 2 Séries de Problemas (15%);

Componente Laboratorial

- 1º trabalho laboratorial
  - Detecção e classificação;
- 2º trabalho laboratorial
  - Opção entre vários temas;
- Linguagem de programação: Python
- *Toolboxes* utilizadas: OpenCV, numpy, matplotlib, scikit-learn, scikit-image;

Bibliografia

- [1] - L. Shapiro, G. Stockman, “Computer Vision”, 2001, Prentice Hall, ISBN – 0-13-030796-3;
- [2] - R. Gonzalez, R. Woods, “Digital Image Processing”, Pearson International Edition, 4.ª edição, 2018, ISBN-13: 978-0133356724;
- [3] – Mubarak Shah, Fundamentals of Computer Vision, December 1997, on-line publication;
- [4] – Joseph Howse, OpenCV Computer Vision with Python, PACKT Publishing, 2013;
- [5] – D. Baggio *et al*, Mastering OpenCV with Practical Computer Vision Projects, PACKT Publishing, 2012;

Temas Abordados

Fundamentos

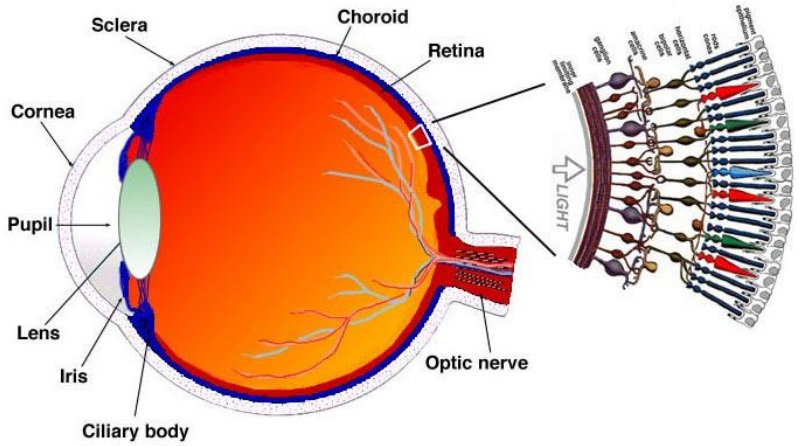
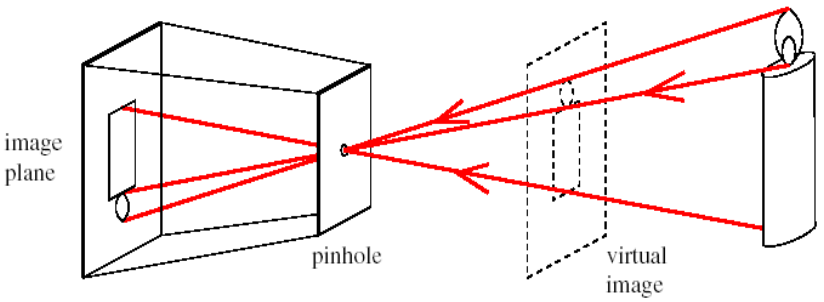
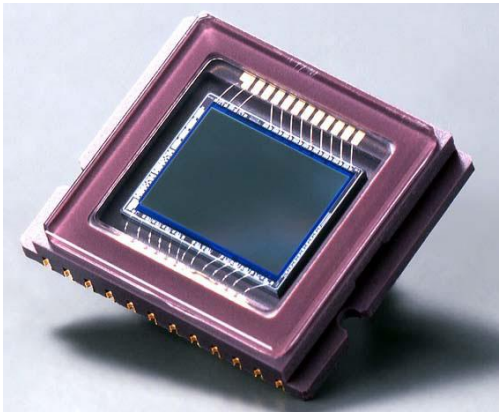
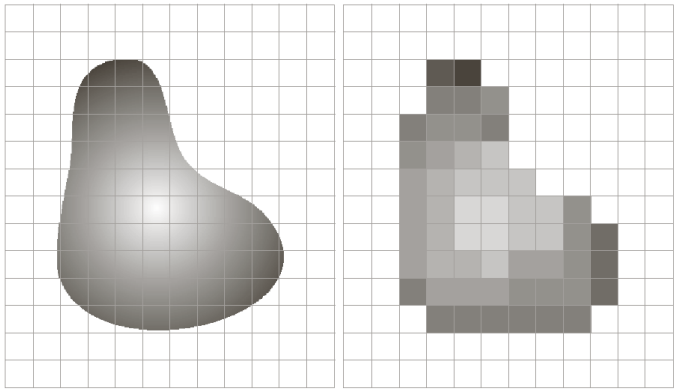


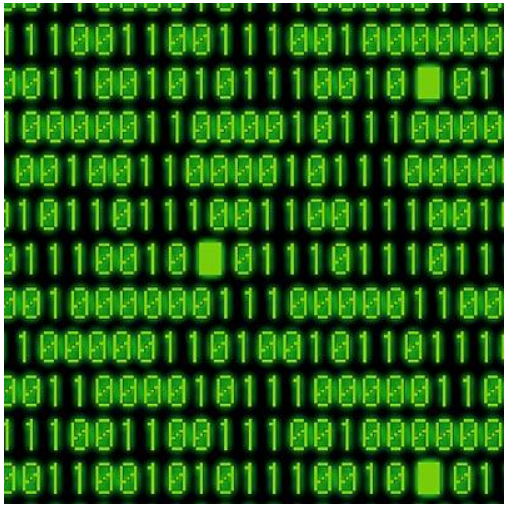
Fig. 1.1. A drawing of a section through the human eye with a schematic enlargement of the retina.

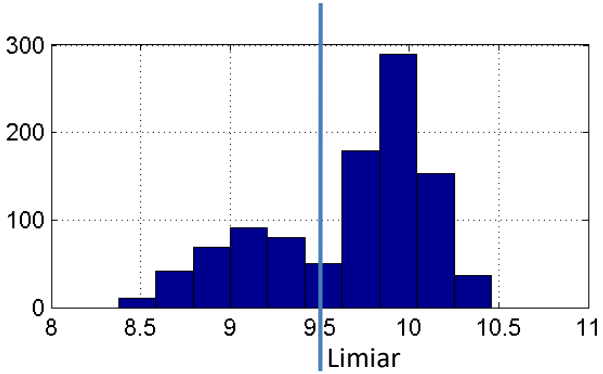


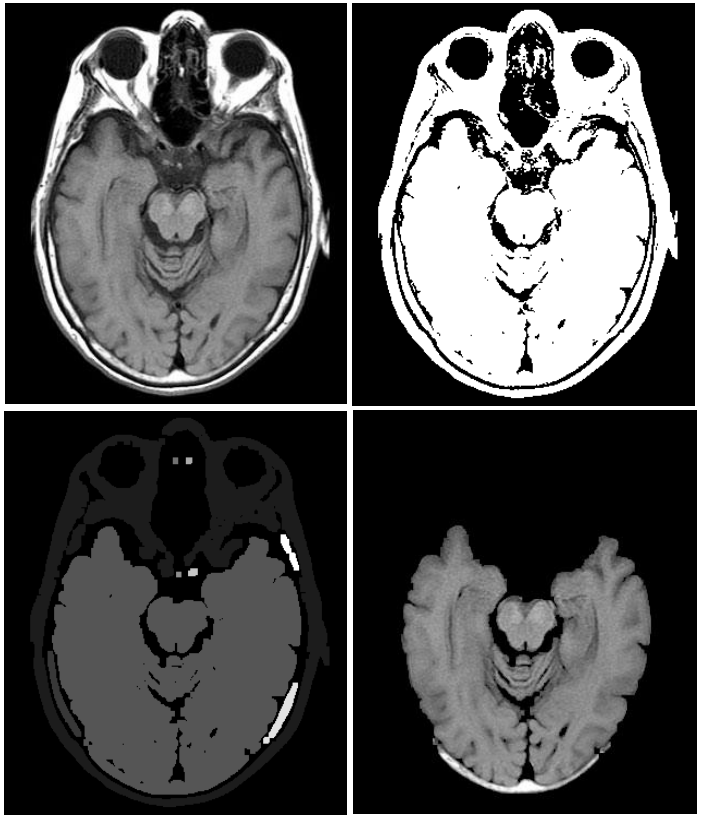




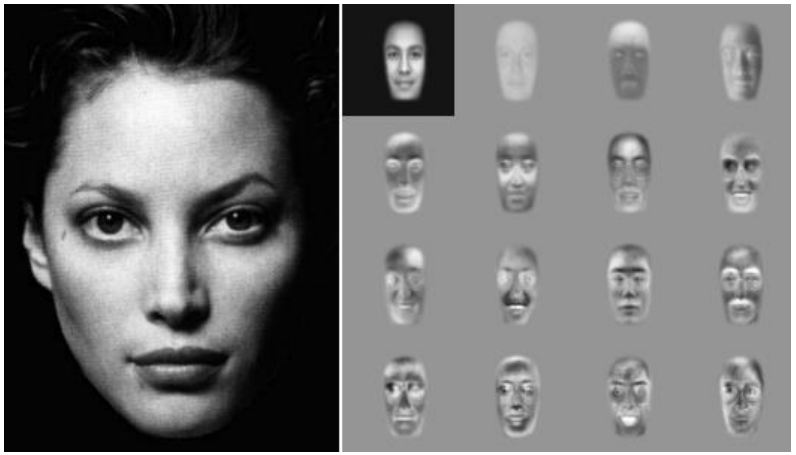
Análise de Imagens Binárias

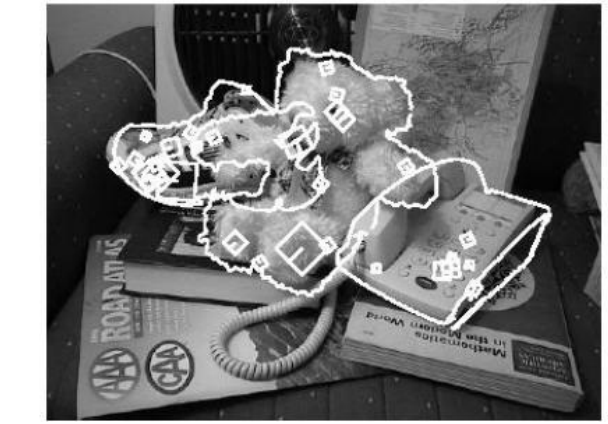






Reconhecimento de Objectos





Pré-Processamento de Imagem

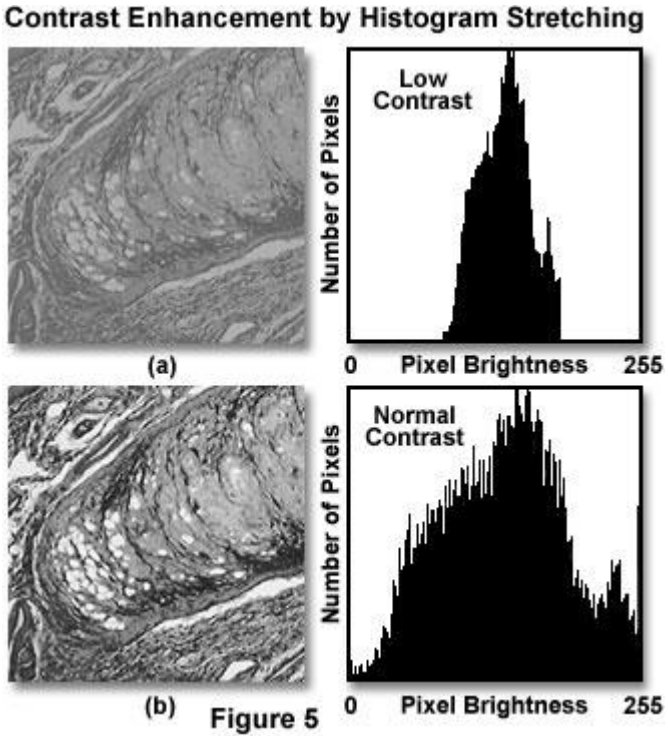
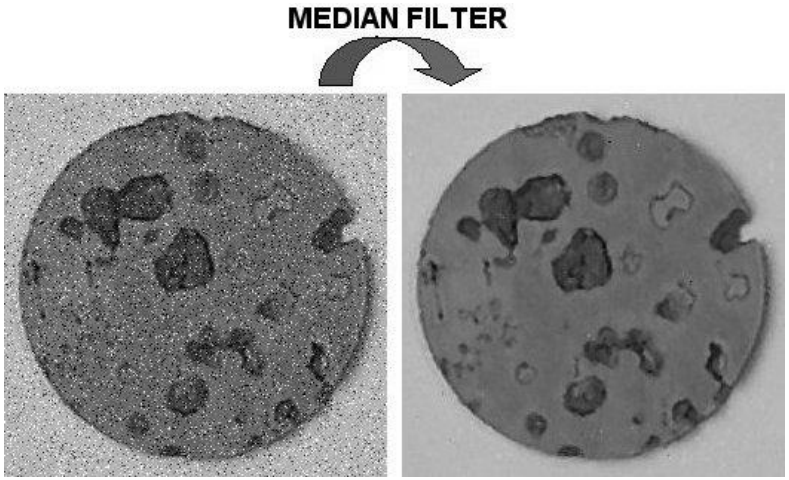
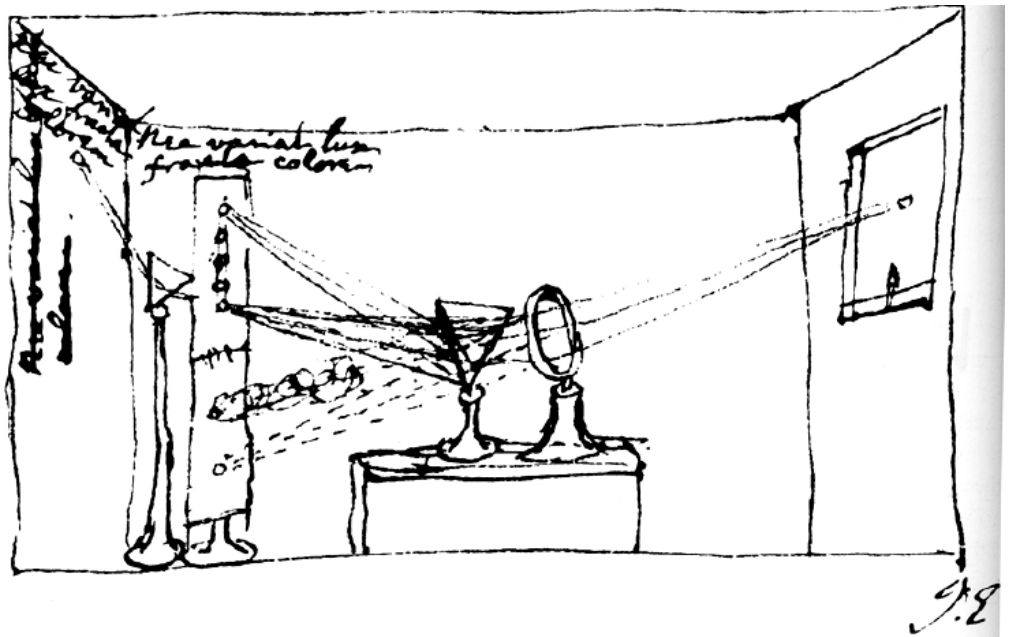


Figure 5

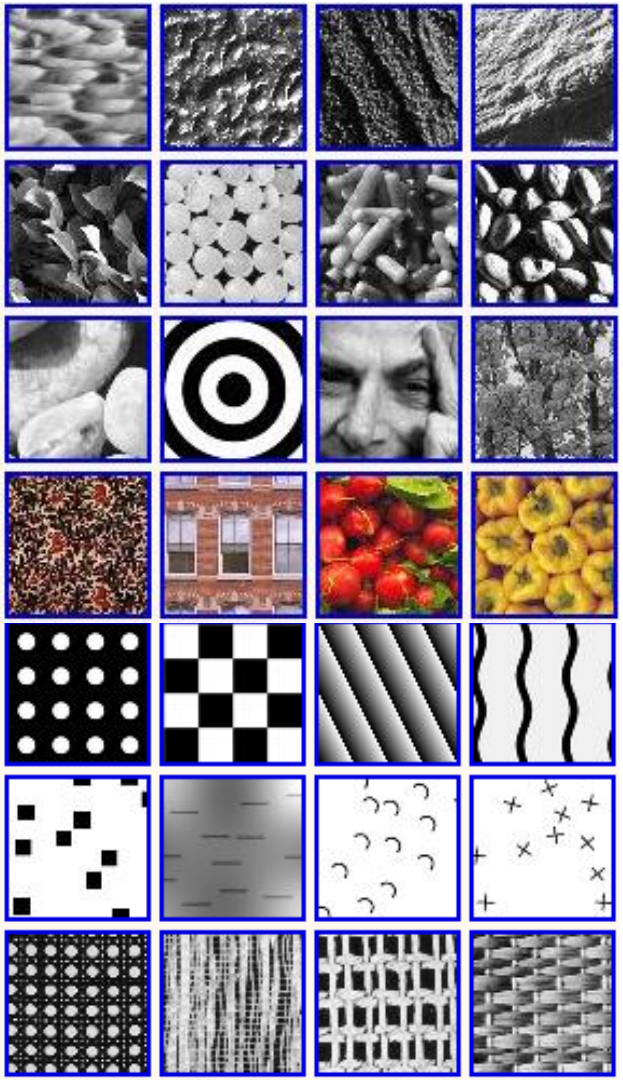
Embossing filter



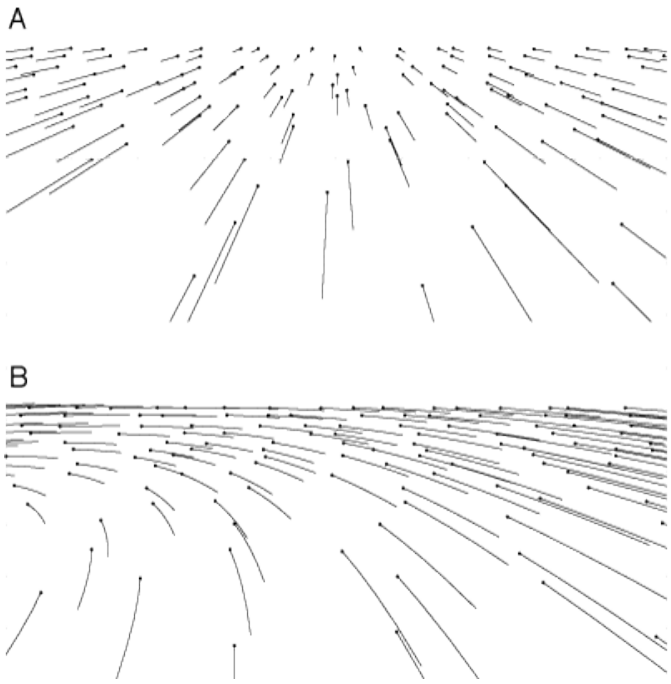
Cor e Textura

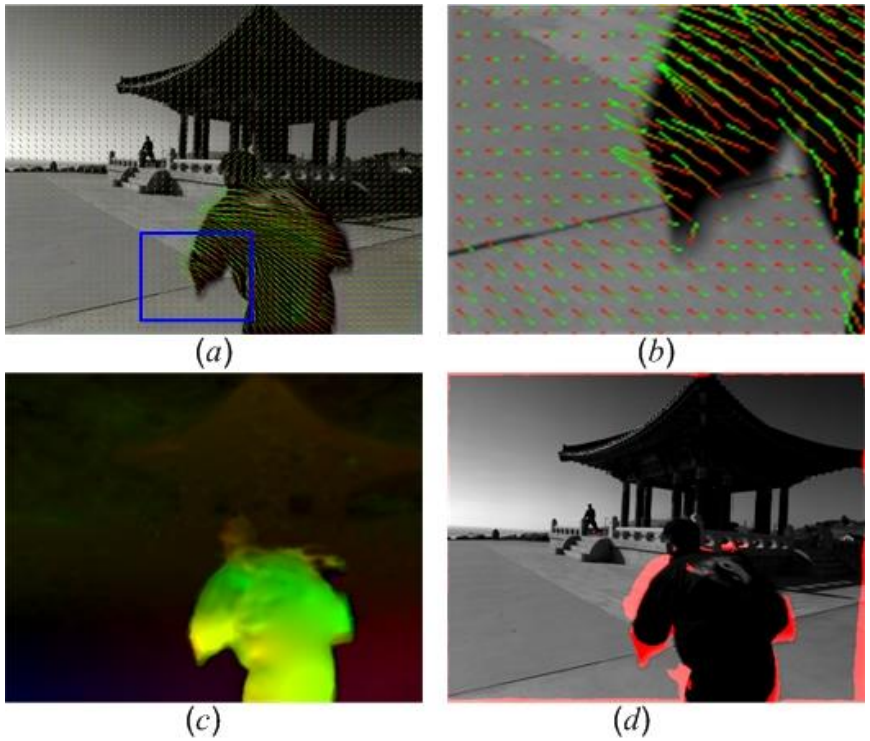


4.1 **NEWTON'S SUMMARY DRAWING** of his experiments with light. Using a point source of light and a prism, Newton separated sunlight into its fundamental components. By reconverging the rays, he also showed that the decomposition is reversible.

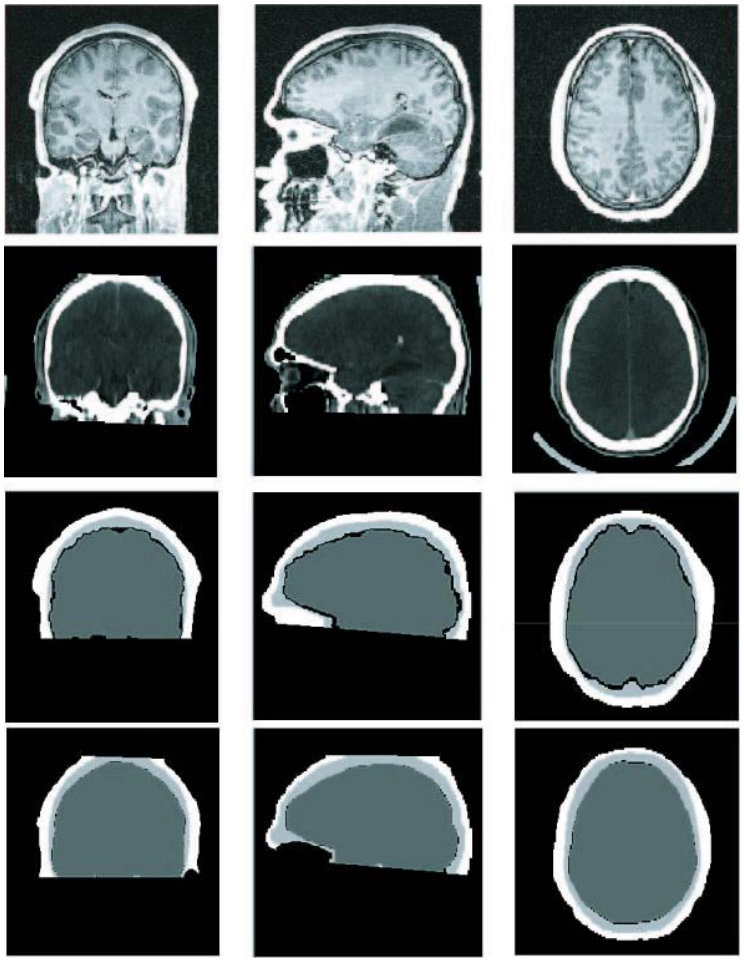


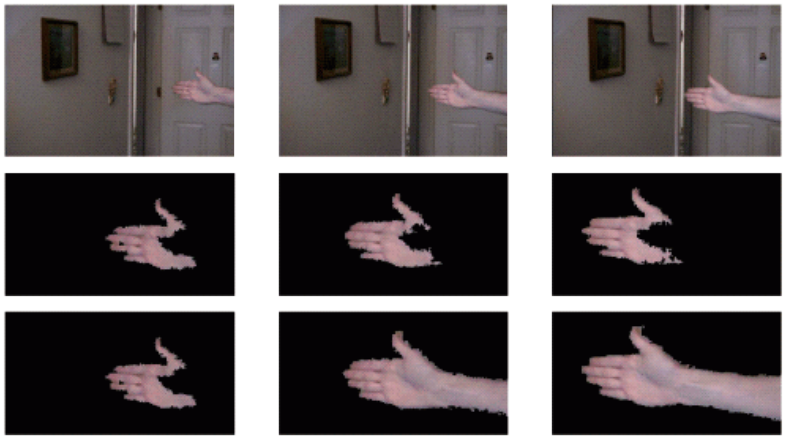
Análise de Movimento





Segmentação





Calibração e Homografia