# Project 3 Questions

## Nomes


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## Instructions

- 4 questions.
- Write code where appropriate.
- Feel free to include images or equations.
- Please make this document anonymous.
- **Please use only the space provided and keep the page breaks.** Please do not make new pages, nor remove pages. The document is a template to help grading.
- If you really need extra space, please use new pages at the end of the document and refer us to it in your answers.

## Questions

**Q1:** Imagine we were tasked with designing a feature point which could match all of the following three pairs of images. Which real world phenomena and camera effects might cause us problems? Use the MATLAB function *corner* to investigate. $corner(I, 1000)$.

*RISHLibrary:* One Two — *Chase:* One Two — *LaddObservatory:* One Two

**A1:** Iluminação, posição do sol, contraste, calibração da câmera.

**Q2:** In designing our feature point, what characteristics might we wish it to have? How should we design for the fundamental tradeoff between feature point invariance and discriminative power?

**A2:** Desejaríamos características que fossem invariantes a escala, invariantes a rotação e que tivessem unicidade. Projetando uma janela quadrada de pixels ao redor do feature point.

**Q3:** In the Harris corner detector, what do the eigenvalues of the 'M' second moment matrix represent?

**A3:** A medida do canto de Harris em múltipla-escala.

**Q4:** Explain the difference between the Euclidean distance and the cosine similarity metrics between descriptors. What might their geometric interpretations reveal about when each should be used? Given a distance metric, what is a good method for feature descriptor matching and why?

**A4:** A distância euclidiana é utilizada quando a magnitude dos vetores importam, enquanto que a semelhança de cossenos é utilizada quando a magnitude dos vetores não importam. Para o matching das features a distância euclidiana é melhor, pois é levado em consideração a magnitude do gradiente.