

Introduction to Robotics

Coursework 1 (20%)

Stereo matching

Out: 26th September 2023 | In: 24th October 2023

Task

For a given pair of left and right images, write a programme to compute the disparity map (depth) image. Your programme should include:

1. Routines for reading in a pair of images (image data will be given to you).
2. Routines for implementing template matching using different similarity metrics and different matching window sizes.
3. Output a disparity (depth) map.
4. The code must be clearly commented.

What to submit

A technical report (both electronic and hard copies), which should include the following

1. An explanation of the principle of binocular stereo vision using **your own language**.
2. A detailed explanation of how you implemented your solution.
3. A discussion on how different window sizes affect the results, and why.
4. A discussion on the different similarity metrics you have used, explaining how they affect the results, and why.

A demo

You must demonstrate your implementation to the TAs.