Introduction to computer vision

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Textbooks:
- Peter Corke, Robotics, Vision and Control
- Richard Szeliski, Computer Vision: Algorithms and Applications http://szeliski.org/Book/

Extracurricular reading:
- Richard Hartley, Andrew Zisserman: multiple view geometry in computer vision
- Yi Ma, Stefano Soatto, Jana Kosecka, S Shankar Sasty: An Invitation to 3-D Vision

Resources by topic:
Image formation, camera calibration:
- Robotics, Vision and Control: Chapter 11
- Computer Vision: Algorithms and Applications: Chapter 6.3
- https://robotacademy.net.au/masterclass/how-images-are-formed/
- https://robotacademy.net.au/masterclass/the-geometry-of-image-formation/

Stereo vision:
- Robotics, Vision and Control: Chapter 14
- Computer Vision: Algorithms and Applications: Chapter 11
- https://robotacademy.net.au/masterclass/3d-vision/

Colour spaces (P1):
- Robotics, Vision and Control: Chapter 10
- Computer Vision: Algorithms and Applications: Chapter 2.3
- https://robotacademy.net.au/masterclass/color/

Basics of the image processing (P2):
- Robotics, Vision and Control: Chapter 12
- Computer Vision: Algorithms and Applications: Chapters 3.2, 3.3
- https://robotacademy.net.au/masterclass/spatial-operators/

Image feature extraction (P3):
- Robotics, Vision and Control: Chapter 13

Schedule

	MONDAY			THURSDAY	FRIDAY
	1015 - 1115	**1315 - 1515**	**1615 - 1715**	**1615 - 1715**	**1315 - 1515**
Week 1	**LECTURE:** - image formation - camera model - distortions - homography	**LAB:** camera calibration: hands on with different tools (matlab, ROS,...), tips and tricks	**LECTURE:** Intro and presentations assignment: - P1: colour spaces - P2: filters - P3: feature extraction	**LECTURE:** Stereo vision: - multiple view reconstruction basics - epipolar geometry - dense/sparse matching - quantization error - 3D video encoding	**LECTURE:** - Student presentations - Discussion / Q&A
Week 2	**LECTURE:** - Mini quiz - Description of the lab assignment + discussion	**LAB:** Work on the assignment (presence facultative, studets can work from home)			**LAB:** Work on the assignment and presentation of the results