

# JOÃO CARTUCHO

<b>Interests</b>	Computer Vision, Robotics, Machine Learning.	
	Outside the University, I'm committed to open source and online communities providing answers to specific technical/programming questions. On GitHub I have over 10 PR's merged to the OpenCV repository. On Stack Overflow I have helped over 200k people.	
<b>Education</b>	CARNEGIE MELLON UNIVERSITY 10/2017–12/2017	Pittsburgh, PA, USA
	Visiting Scholar, Machine Learning, Professor: Manuela Veloso	
	<ul style="list-style-type: none"><li>– Introduced an algorithm in which robots know how to address their visual perception limitations: they rely on proactively asking for help from humans in the environments for labeling the surrounding objects.</li></ul>	
	POLITECNICO DI TORINO 09/2015–08/2016	Torino, Italy
	Erasmus Student, Computer Science, GPA: 26.44/30.00	
	<ul style="list-style-type: none"><li>– Able to develop complex data structures and ADTs (linked lists, queues, stacks, heaps, trees, hash tables and graphs) and related algorithms</li><li>– Able to evaluate algorithm complexity and improve efficiency in terms of execution time and/or memory use</li><li>– Able to solve optimization and network flow problems, using exact methods, heuristics or linear programming</li><li>– Able to solve problems with deep learning, pattern recognition or neural networks</li><li>– Able to develop computer vision applications</li></ul>	
	INSTITUTO SUPERIOR TÉCNICO, LISBON 09/2013–now	Lisbon, Portugal
	M.S. in Aero-Space Engineering. Current Master's Average (0-20): 17.44	
	<ul style="list-style-type: none"><li>– Able to fully develop all stages of the life-cycle of airplanes, helicopters, robotized aircrafts, spaceships and satellites, from its conception and project, to the operation and maintenance, tests and production.</li></ul>	
	UNIVERSITY ENTRANCE EXAMINATION National Exams (final grade 0-20):	PORTUGAL
	<ul style="list-style-type: none"><li>– Mathematics A: 18.1</li><li>– Physics and Chemistry: 19.8</li></ul>	
<b>Experience</b>	GOOGLE SUMMER OF CODE 2017 05/2017–08/2017	Lisbon, Portugal
	OpenCV Documentation Improvement Tools	
	<ul style="list-style-type: none"><li>– HighGui module in Java;</li><li>– Python code Tests (using Pylint);</li><li>– Java compiling Tests (using Apache Ant);</li><li>– Function/Constant/Class signatures in Python and Java;</li><li>– 15 updated tutorials (added Java and Python codes).</li></ul>	

GOOGLE SUMMER OF CODE 2016  
05/2016–08/2016

Torino, Italy

Multi-language OpenCV Tutorials in Python, C++ and Java

- Choose Your Language Buttons;
- Tools to Enhance Usability;
- Java and Python translation of the code in C++.

## Project Activities

DRONE LOCALIZATION USING EKF AND CV  
09/2016–01/2017

Lisbon, Portugal

Course: Autonomous Systems.

Real-time pose estimation (position + orientation) of a Drone merely with its camera. This task was achieved by using an Extended Kalman Filter (EKF) and Computer Vision with data from aerial images.

Final grade 0-20 : 19 (best student in 2016/2017)

FINGERPRINT BADGING SYSTEM  
02/2016–07/2016

Torino, Italy

Course: Project and Laboratory on Communication Systems.

Developing a Badging System Device using .NET FEZ Spider Kit from GHI Electronics.

Final grade 0-30 : 30L (excellent)

HANDWRITING DIGIT RECOGNITION  
09/2015–07/2016

Torino, Italy

Course: Computer Vision.

Developing Software to recognize handwritten digits in a photo.

Final Project grade 0-5 : 5 (best)

## Skills

Programming Languages: C (grade 19/20), C++, C# (grade 30/30), Java (grade 30/30), Matlab, Python, HTML, Javascript, jQuery  
Extra Interests: OpenCV, ROS, Solid Works

Languages: Portuguese (native), English (fluent, Cambridge ESOL - FCE), Italian (fluent)  
Volunteering in: Finland, Greece, Italy, Netherlands, Portugal, Romania, Turkey

## Honors/Awards

- Academic Merit Diploma, IST - Aerospace, 2015/2016
- FCT Scholarship, CMU
- 2nd place, CMU's Annual Robotics Hackathon

## Publications

TOWARDS A ROBUST INTERACTIVE AND LEARNING SOCIAL ROBOT  
*Submitted to AAMAS 2018.*

Michiel de Jong, Kevin Zhang, Travers Rhodes, Aaron Roth, Robin Schmucker, Chenghui Zhou, Sofia Ferreira, João Cartucho, Manuela Veloso.

## References

**Manuela Veloso**

Head, Machine Learning Department  
Carnegie Mellon University  
mmv@cs.cmu.edu

**Vincent Rabaud**

Google Inc., Senior Software Engineer  
OpenCV Foundation, Co-founder  
vincent.rabaud@gmail.com