SEM5946 | SEM0576
Veículos Autônomos Aéreos

Aula #8: Sistemas Embarcados de Sensoriamento – Percepção – p2

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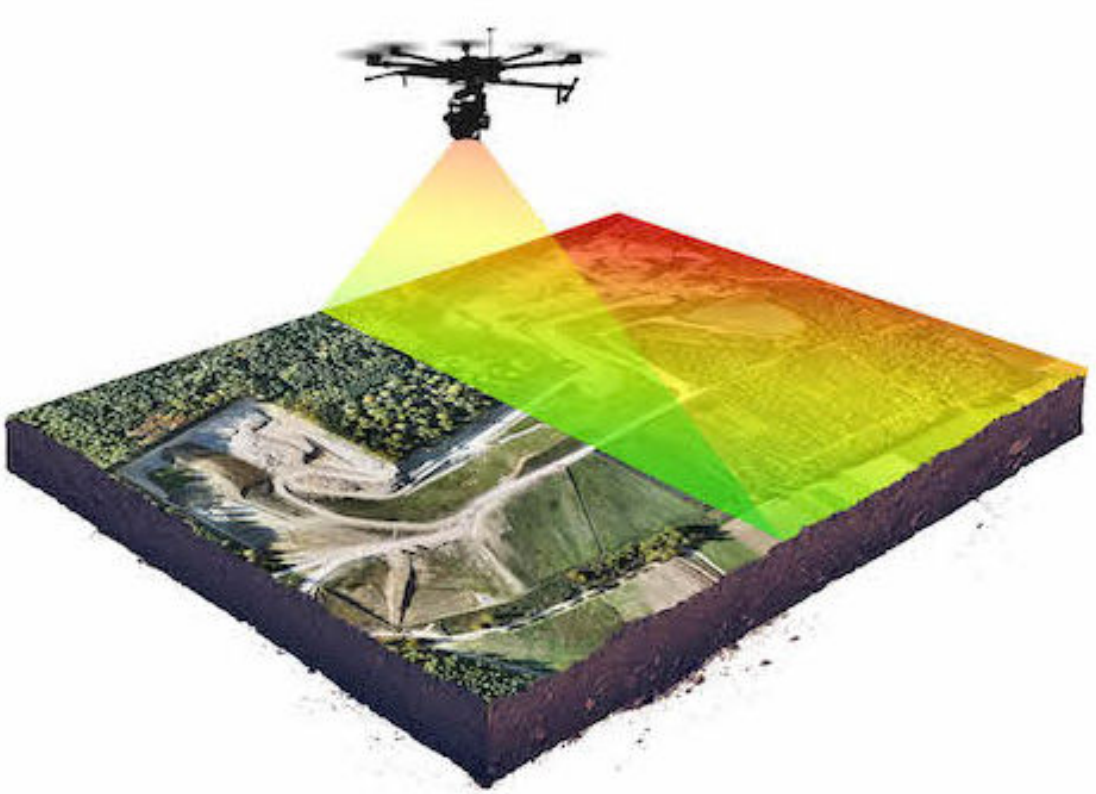
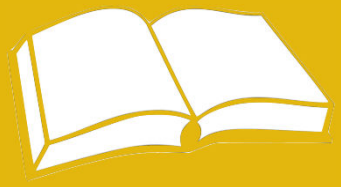


Fonte: https://wingtra.com/drone-photogrammetry-vs-lidar/

São Carlos, 01/07/20

Conteúdo



- Introdução

Introdução

- Sensores Embarcados

Percepção

- “Take-home messages”
- Próxima aula…

Conclusão

Conteúdo

Introdução

- **Sensores Embarcados**

Percepção

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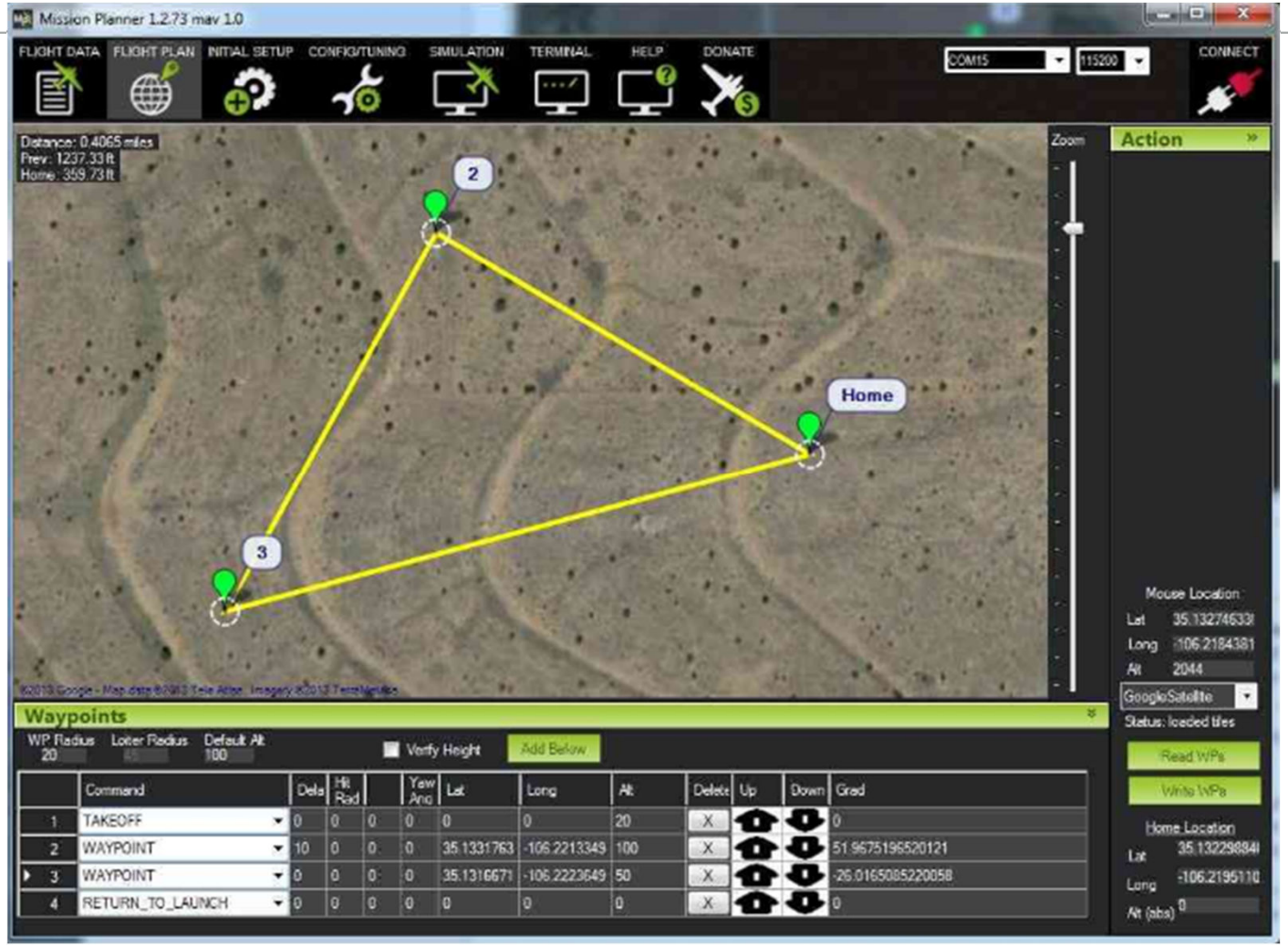
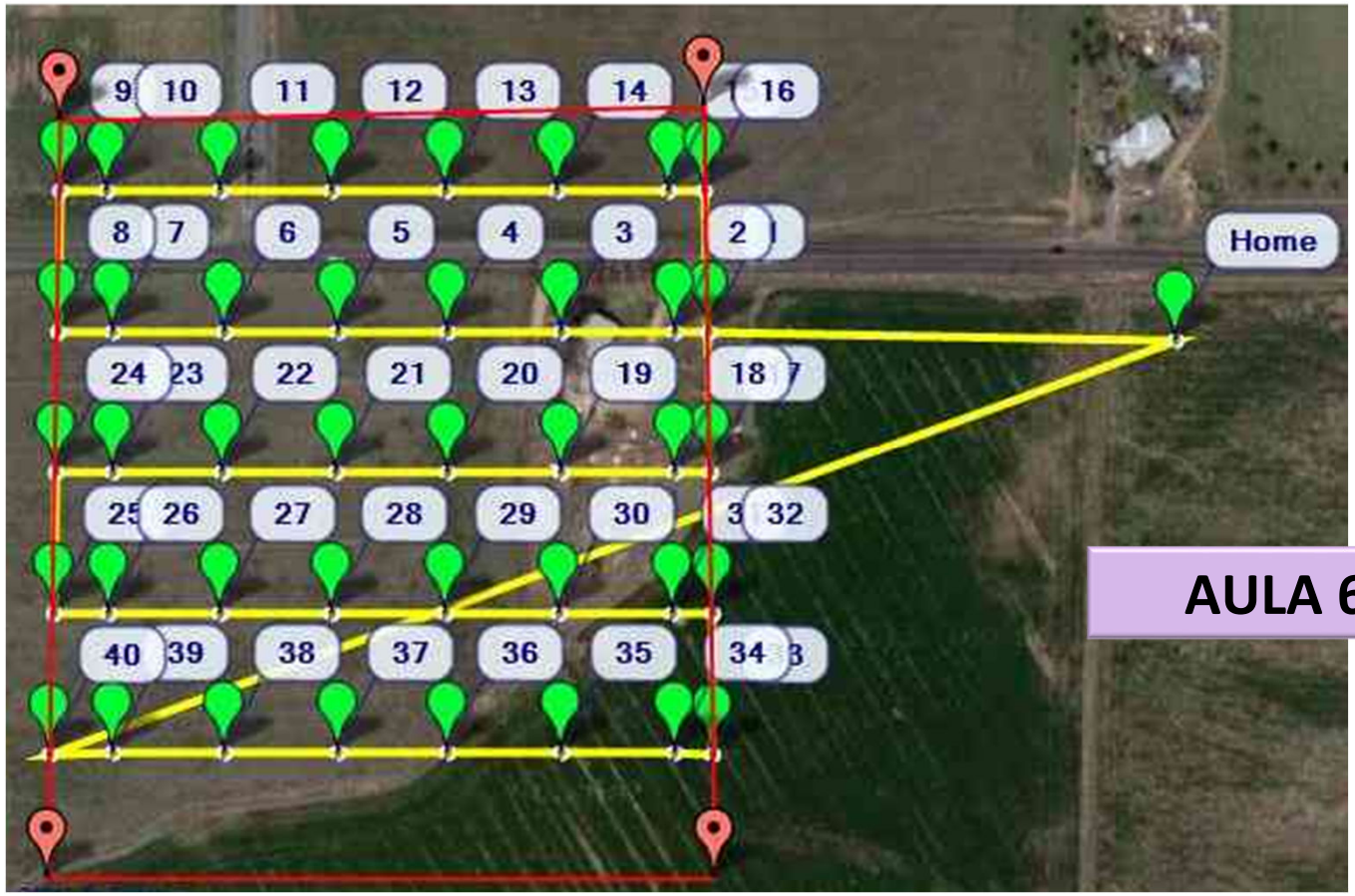
Outdoor



https://ardupilot.org/planner/docs/common-planning-a-mission-with-waypoints-and-events.html

https://www.youtube.com/watch?v=rui2Trps2yc

Outdoor



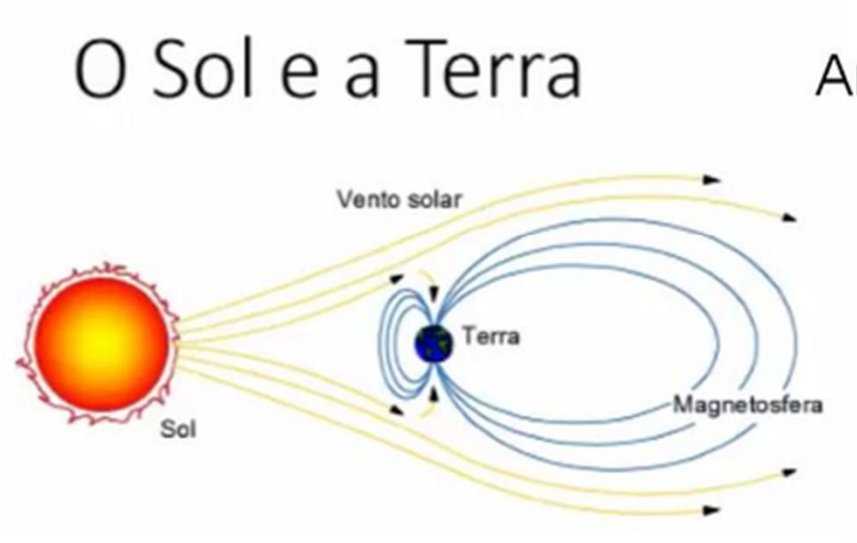
https://ardupilot.org/planner/docs/common-planning-a-mission-with-waypoints-and-events.html

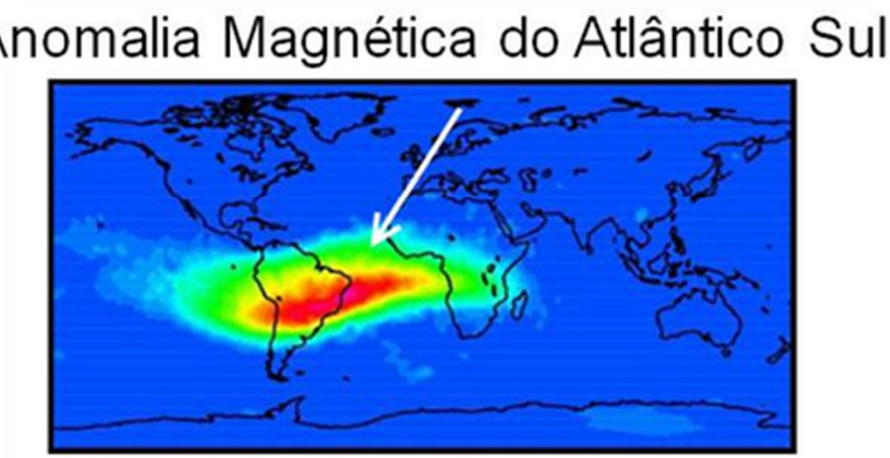
https://www.youtube.com/watch?v=rui2Trps2yc

Outdoor

GNSS *(Global Navigation Satellite System)*

- Problemas:
  - Áreas Próximas à Anomalia Magnética do Atlântico Sul



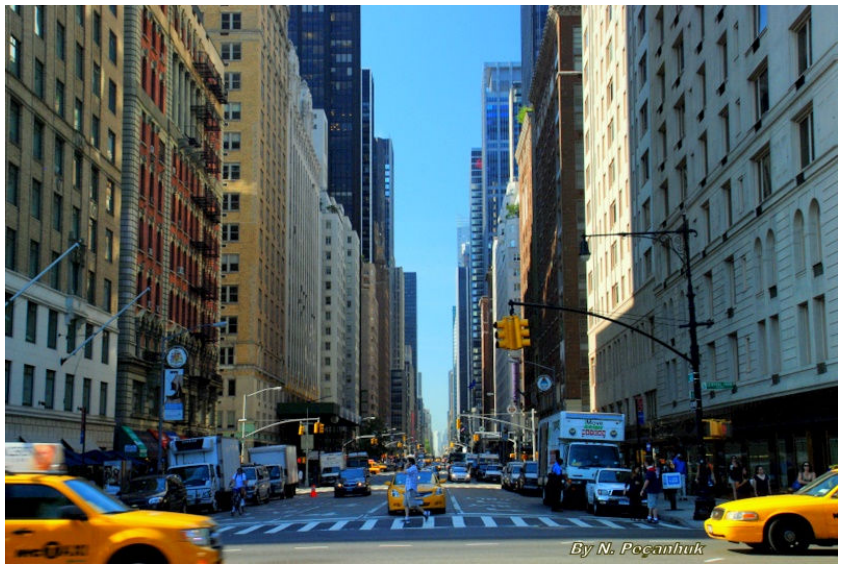


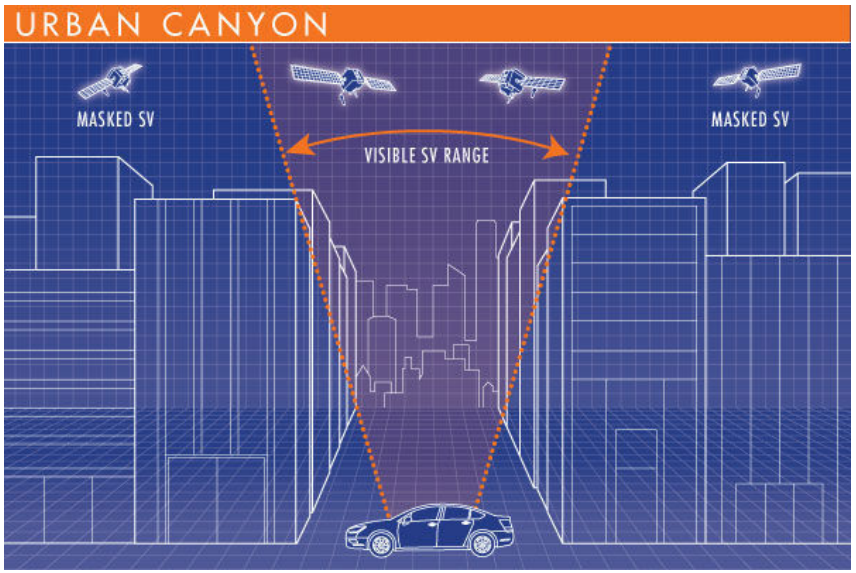
Fonte: [https://www.researchgate.net/publication/278675452_MAGNETISMO_NO_TEMPO_E_NO_ESPACO/figures?lo=1]

Outdoor

GNSS *(Global Navigation Satellite System)*

- Problemas:
  - *Canions* Urbanos





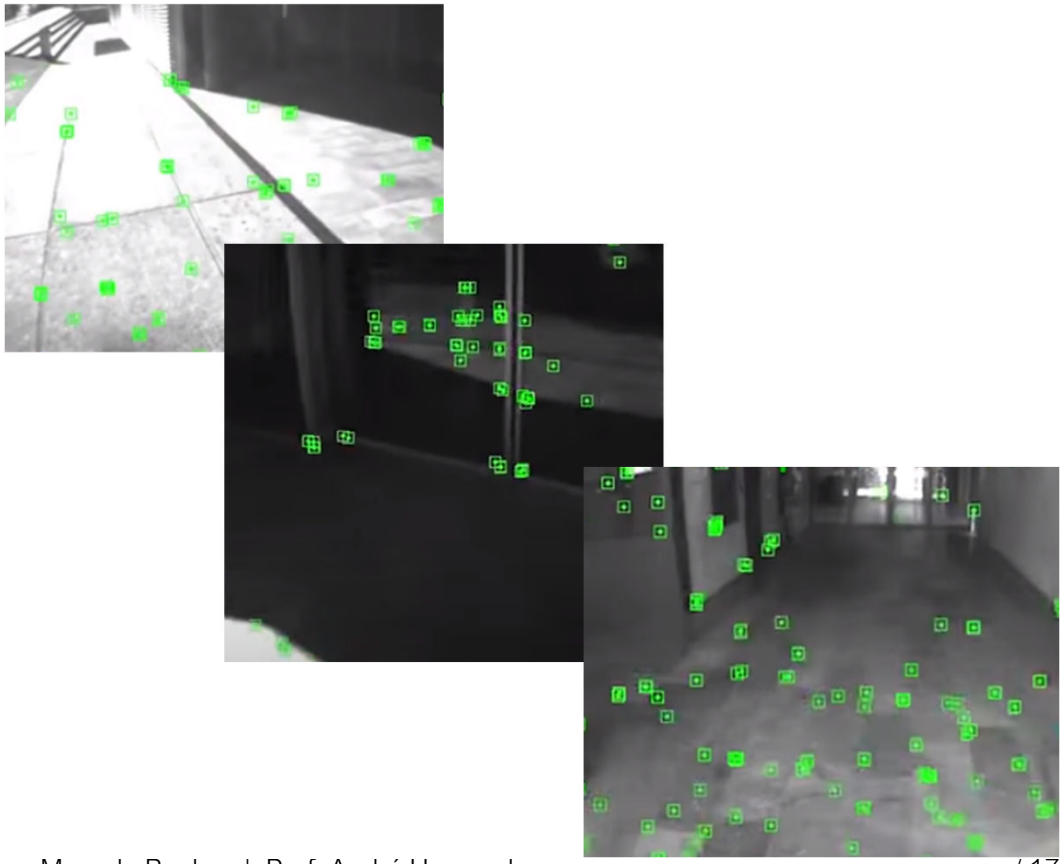
Fonte: [https://www.trekearth.com/gallery/North_America/United_States/Northeast/New_York/New_York_City/photo1336545.htm]

Fonte: [http://geoawesomeness.com/gnss-shadow-matching-improving-gnss-positioning-urban-canyons/]

Visão Computacional

Para detectar coisas externas
Sensor fim

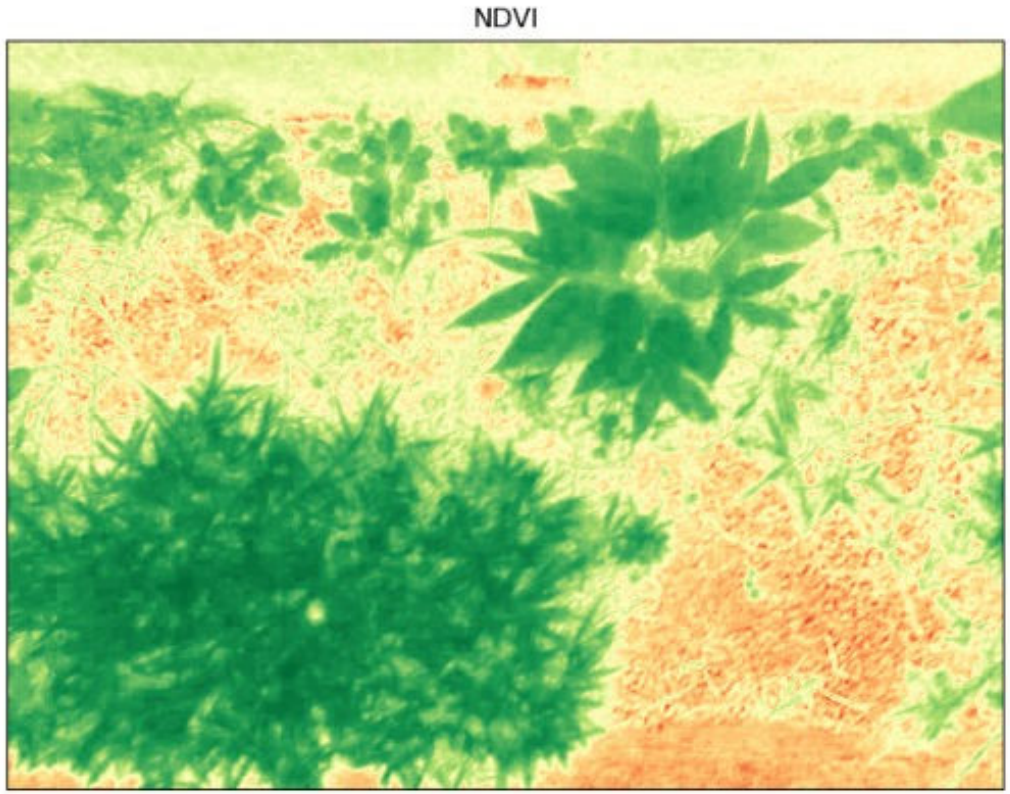
Para auxiliar na movimentação do drone



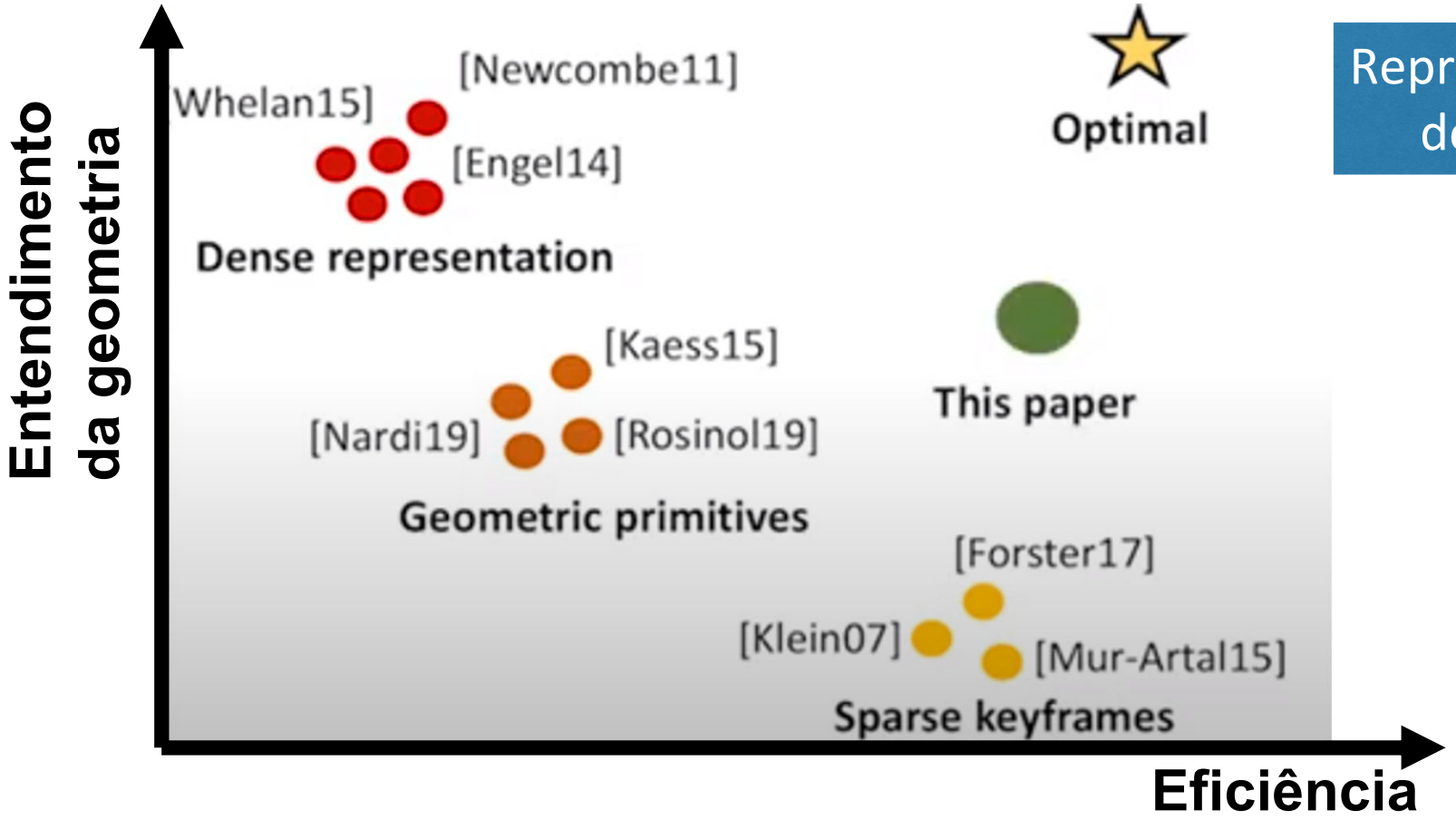
Visão Computacional

Para detectar coisas externas - Sensor fim

RG - NIR



Um passo além ...



Representações de mapas

https://www.youtube.com/watch?v=s2LpU-jUZXU&feature=youtu.be
https://www.youtube.com/watch?v=ymI3FmwU9AY&list=PLxXaypZSkh7K32tkvMIpFeG0MX53fNhq6&index=9
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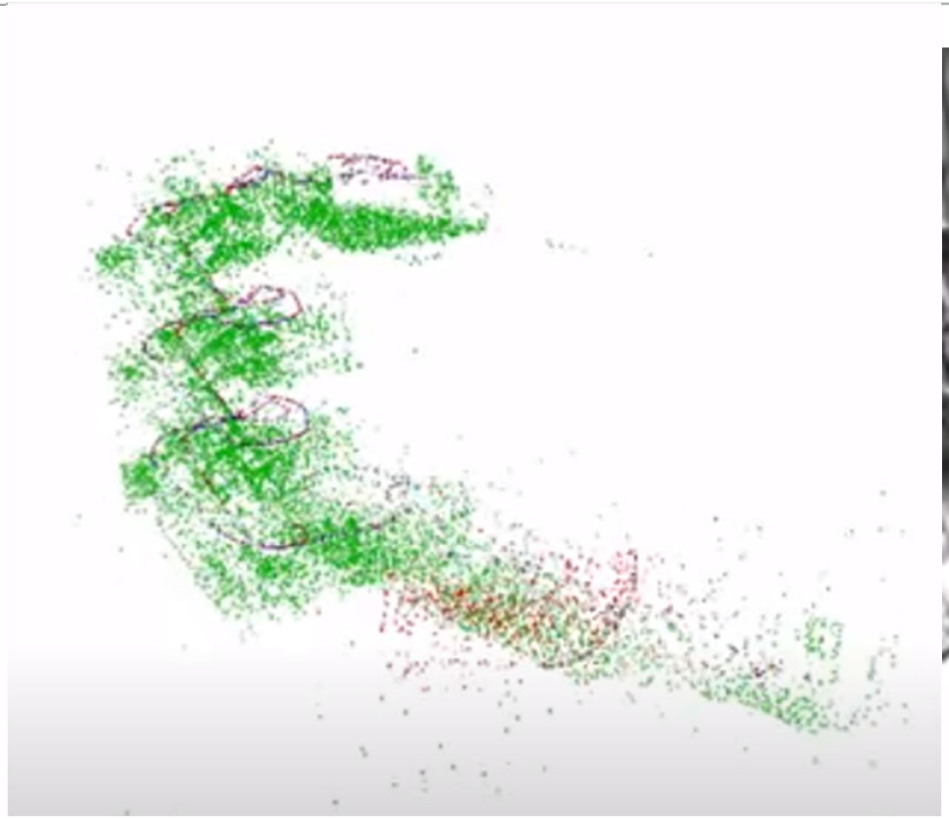
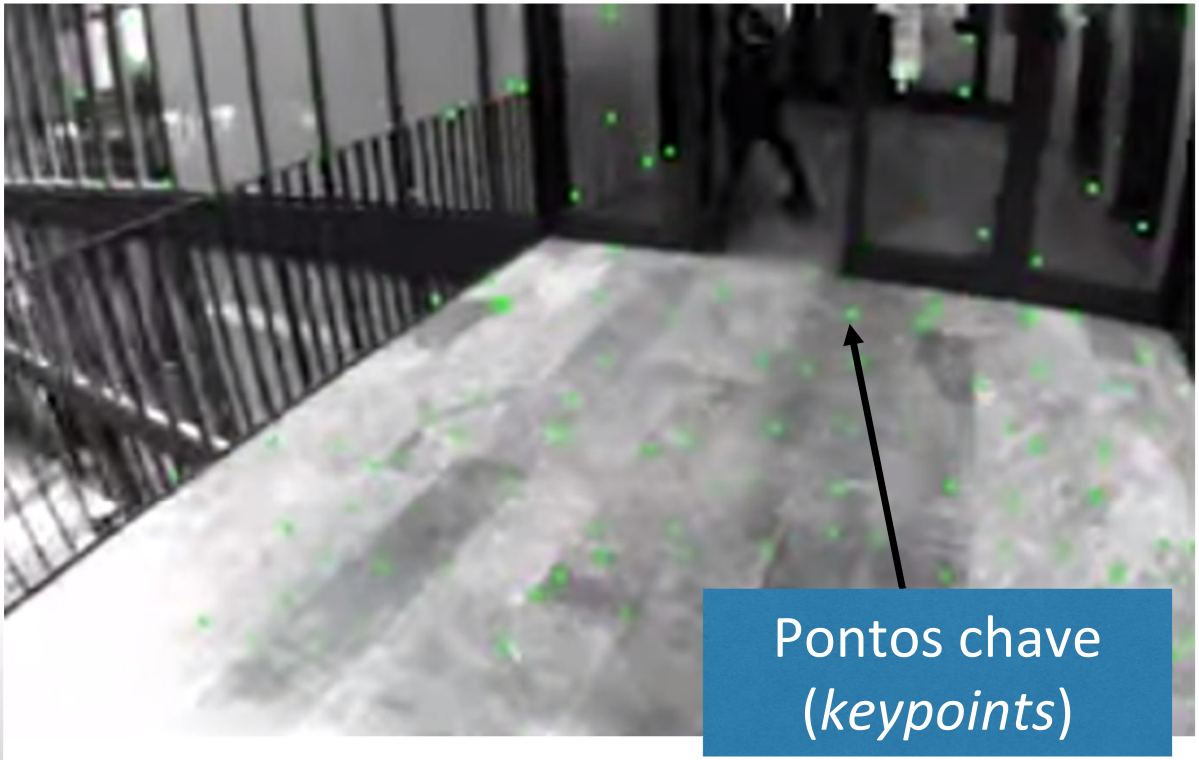
Um passo além ...



Visual-Inertial Estimation (SLAM)



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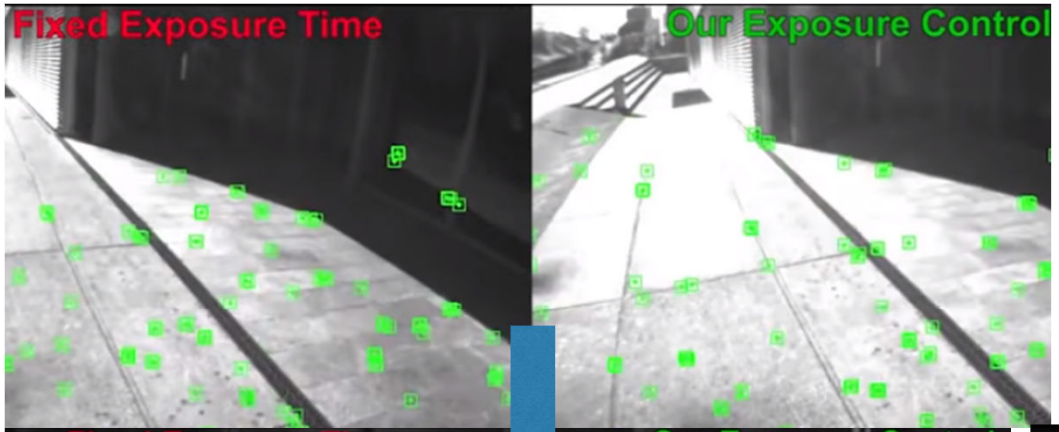
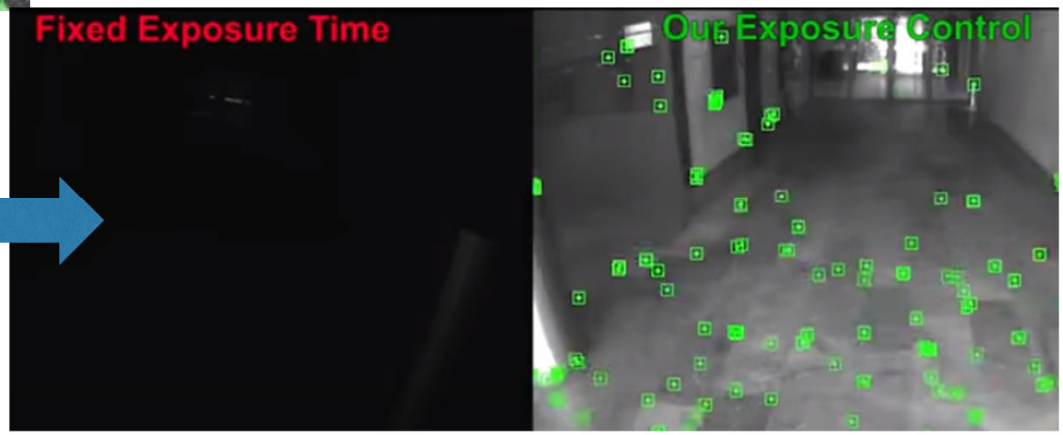
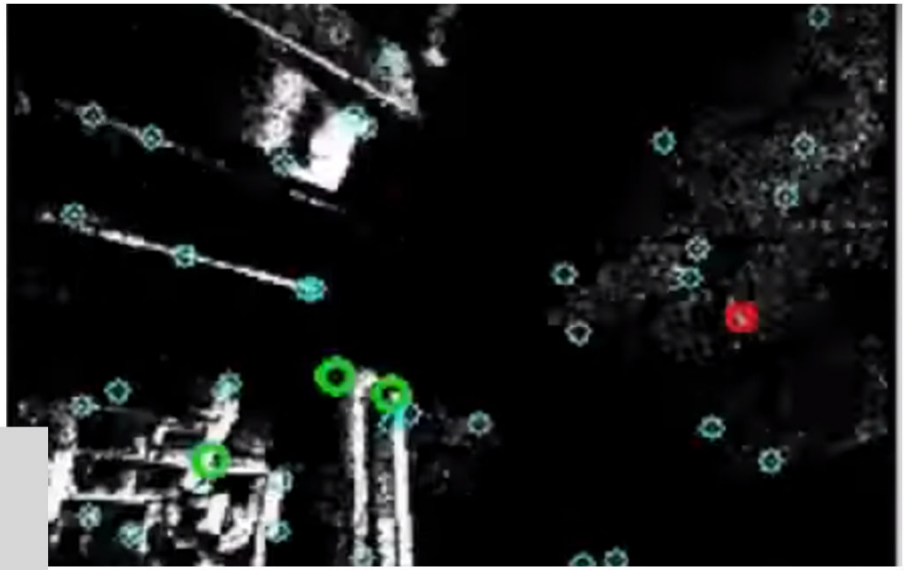
Um passo além ...

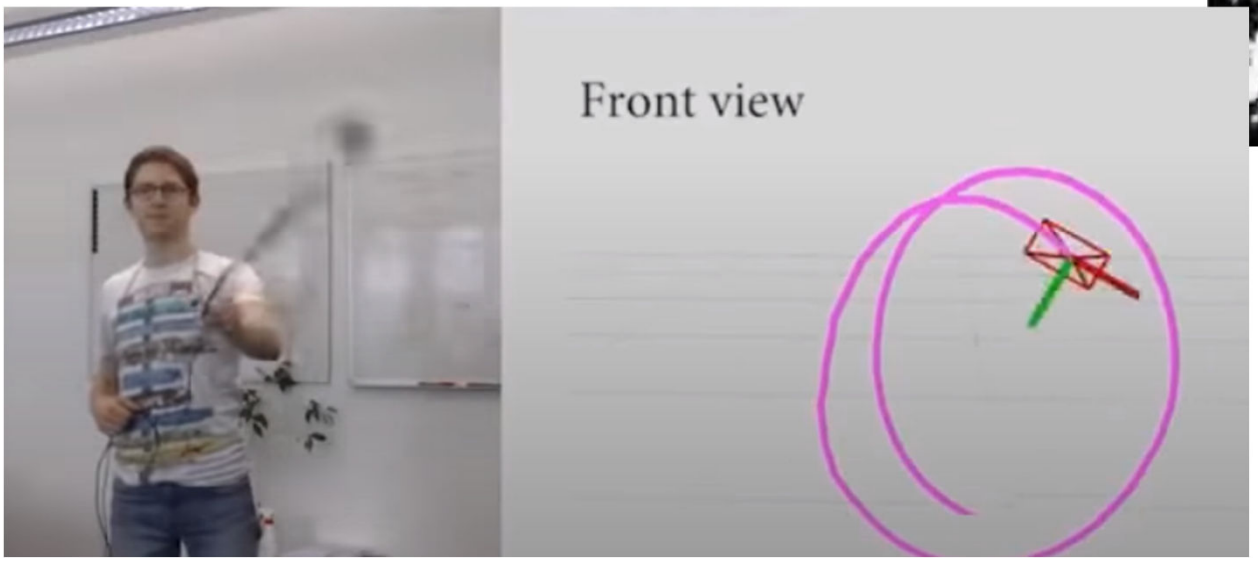


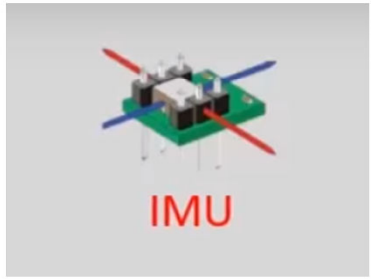


- https://www.youtube.com/watch?v=TKJ8vknlXbM&list=PLxXaypZSkh7K32tkvMIpFeG0MX53fNhq6&index=7&t=0s

Um passo além ...

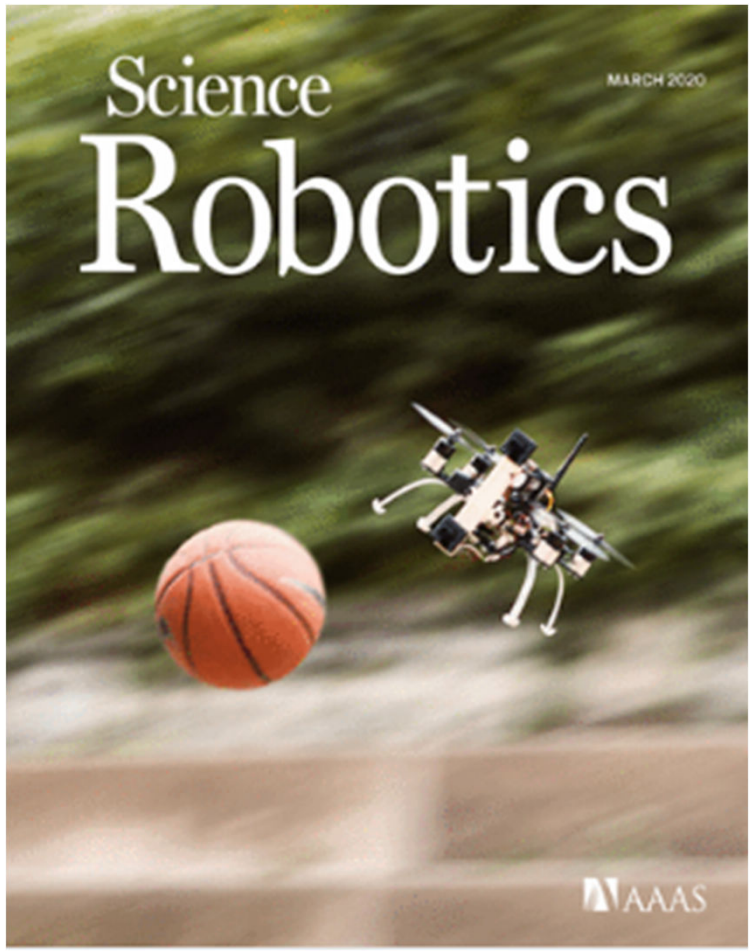


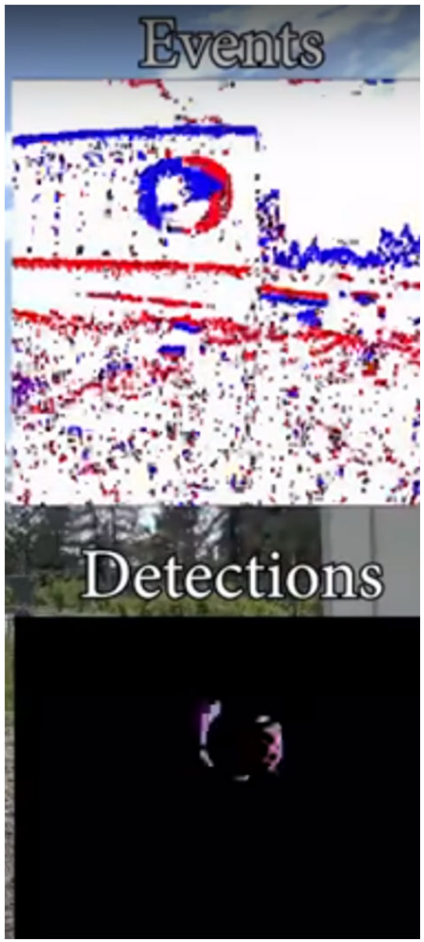




- https://www.youtube.com/watch?v=0hDGFFJQfmA&list=PLxXaypZSkh7K32tkvMIpFeG0MX53fNhq6&index=5&t=0s

Um passo além ...





- https://www.youtube.com/watch?v=BzykucxFddI&list=PLxXaypZSkh7ImKP4K9v9418ZzB86dBNAU&index=3

Conteúdo

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Percepção

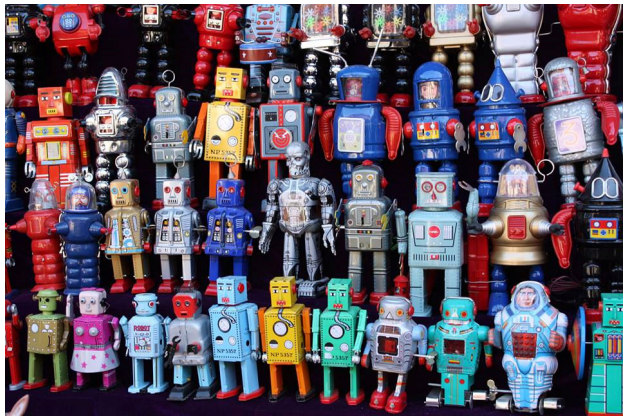
- **“Take-home messages”**
- **Próxima aula…**

Conclusão

Onde saber o que está acontecendo em Robótica?

Facebook!!! https://www.facebook.com/ieee.ras/

IEEE Robotics & Automation Society



IEEE SPECTRUM

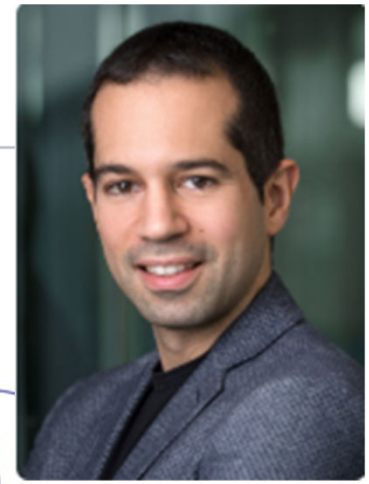
https://spectrum.ieee.org/

Onde saber o que está acontecendo em Robótica?

University of Zurich[UZH] | ETH zürich

ROBOTICS & PERCEPTION GROUP

Department of Informatics - Institute of Neuroinformatics - Robotics and Perception Group



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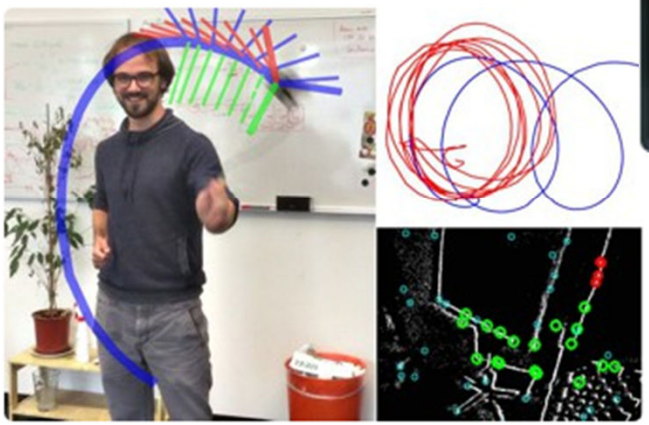
Robotics and Perception Group

Welcome to the website of the Robotics and Perception Group led by Prof. Davide Scaramuzza. Our lab was founded in February 2012 and is part of the Department of Informatics, at the University of Zurich, and the Department of Neuroinformatics, which is a joint institute of both the University of Zurich and ETH Zurich.



Our mission is to research the fundamental challenges of robotics and computer vision that will benefit all of humanity. Our key interest is to develop autonomous machines that can navigate all by themselves using only onboard cameras and computation, without relying on external infrastructure, such as GPS or position tracking systems, nor off-board computing. Our interests encompass predonimantly micro drones because they are more challenging