



Autonomous Navigation for Flying Robots

Lecture 1.2: Why Quadrotors?

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Motivation



- Imagine you have a flying camera
- What would you use it for?

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<http://gopro.com/camera-mounts/chest-mount-harness>

- Search and rescue missions



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- Building inspections after earth quakes



<http://www.nifti.eu/news/photo-album-of-mirandola-mission-on-facebook>



<http://www.nifti.eu/news/photo-album-of-mirandola-mission-on-facebook>

Applications

- Roof inspection
- Bridge inspection
- Precision agriculture/remote farming



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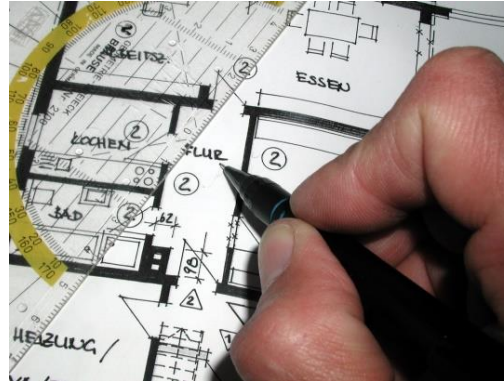
European Commission, <http://ec.europa.eu/enterprise/flipbook/rpas/files/assets/common/downloads/publication.pdf>

Applications

- Mapping of buildings
- Architecture
- Factory planning



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Applications

- Transportation



Amazon



Domino's

- Many useful applications
- Large commercial potential

- Problem:
Current solutions require skilled human pilots

- Motivating question in this course:
How can we increase the autonomy of flying robots?

- Many of these applications would benefit of an increased autonomy
- Different levels of autonomy
 - Manual flight (automatic attitude)
 - Semi autonomous (height control, position control, automatic takeoff/landing, obstacle avoidance, ...)
 - Fully autonomous (waypoint navigation, path planning, exploration, people following, ...)

What would you like to use an autonomous quadrotor for?

- Propose one or more ideas for realization
- Vote for your favorite idea
- Discuss in the forum: What are the particular challenges?
How large is the commercial potential?
- We will discuss the three most popular ideas next week