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Using defense technologies and
other hi-tech methods for better
wildlife conservation

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Science or science fiction?



Force fields and invisible walls



Wildlife projects that can benefit from advanced technologies (hi-tech)

- Illegal hunting / poaching / trade
- Wildlife-human conflicts
- Preventing illegal poisoning
- Wildlife monitoring
- Invasive species control
- Population studies
- DNA identification
- Habitat management
- Internet and social media crime



Surveillance and perimeter defense

- Motion detection
- Acoustic detection
- Thermal imaging (FLIR)
- UAS – Unmanned Aircraft Systems
(Drones / UAV)
- Aerostat (tethered balloons)
- Long range and scanning cameras
- LiDAR multi-target surveillance
- Foliage-penetrating Radar



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Surveillance and perimeter defense

- Aerostat - Static hidden motion and acoustic detection along frontiers





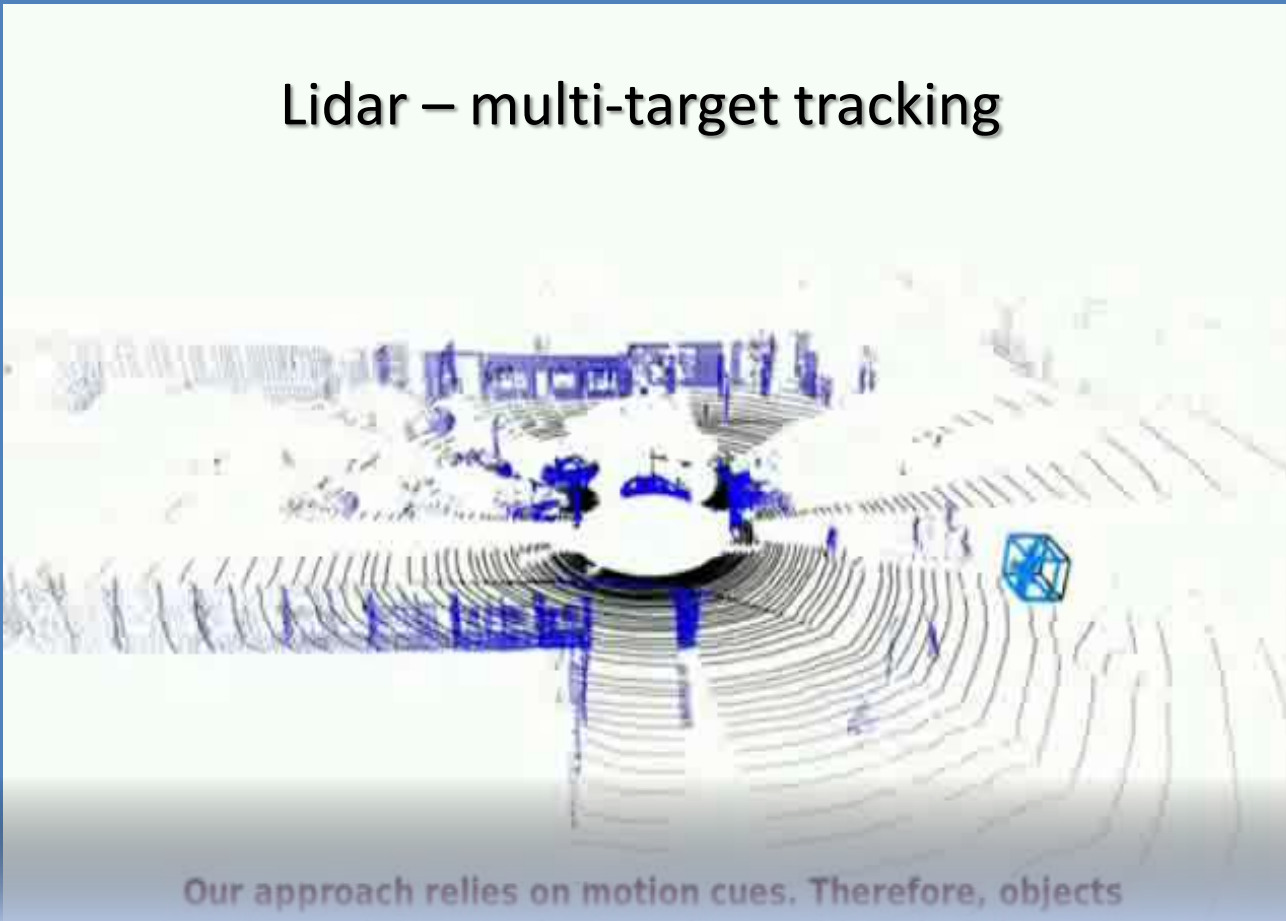
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Surveillance and perimeter

Lidar – multi-target tracking



Our approach relies on motion cues. Therefore, objects



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UAS – Unmanned Aircraft Systems (Drones / UAV)



Detection



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UAS – Unmanned Aircraft Systems (Drones / UAV)



Predictive



UAS – Unmanned Aircraft Systems (Drones / UAV)

- UAV's are also for conservation:
 - Animal counting and surveys
 - Vessel monitoring (e.g. whaling ships)
 - Animal tracking (e.g. via VHF collars/triangulation)
 - Migration tracking
 - Habitat management
 - Camera trap image retrieval
 - Species identification



Satellite-assisted technologies

- Real-time Anti Poaching Intelligence Device (RAPID) – GPS in rhino horn
- Eye-in-the-sky (rewind method)
- Remote sensing – habitat changes



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Human-wildlife conflicts

- Agricultural damage
- Bird-Aircraft Strike Hazard
- Vehicular collisions (road kill)



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Hi-tech solutions to human-wildlife conflicts

- Olfactory and tactile (chemical) repellants
- Immuno-contraception for popl'n control



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Hi-tech solutions to human-wildlife conflicts

- Acoustic deterrence
- Ultrasound does not work!
- Distress calls are hard-wired.



Hi-tech solutions to human-wildlife conflicts

- Olfactory and tactile (chemical) repellants

New repellants based on animal's nervous system receptors

Birds are not deterred by pepper.

Slow release capsaicin for mammals



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Hi-tech solutions to human-wildlife conflicts

- Robo-falcon and drones





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DNA and stable isotopes

- Ivory and rhino-horn tracing
- Bushmeat
 - species identification
 - source population





Preventing illegal poisoning

- Artificial sniffer technology
- SCIO (handheld molecular spectroscopy)
- Nano-chip tracing



SCIO by Consumer Physics



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