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AI-Flight

AI-Enabled autonomous flight of indoor drones

Project type: Sondierungsprojekt
Project duration: 12 month (09/21 - 08/22)

Maximilian Mrstik
D-ARIA GesmbH
Wien

Jesús Pestana Puerta
Pro2Future GmbH
Graz

Brief description of the consortium partners

Graz University of Technology (TU Graz), Institute for Computer Graphics and Vision (ICG)
- Topics: 3D Computer Vision and CV for Robotics, Object Recognition, AI, Machine Learning, Augmented Reality…
- Prof. Fraundorfer has extensive expertise in the project related domains of CV

P1: Pro2Future GmbH (PRO), A-8010 Graz
- COMET research center, co-operative research with companies and universities
- Digitalization in the industrial domain and its integration with novel cognitive systems

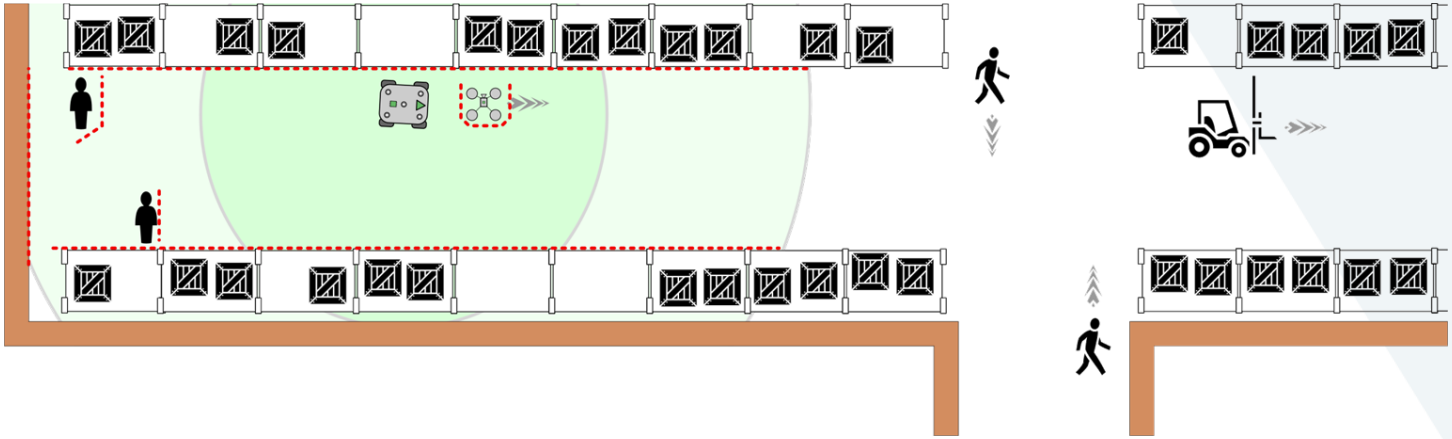
P2: D-ARIA GmbH (D-ARIA), A-1040 Wien
- Small startup focusing on providing services related to warehouse management.
- D-ARIA is offering an inventory drone solution with a human observer as a service.

P3: Roto Frank Austria GmbH (ROTO), A-8401 Kalsdorf
- Manufacturer/supplier of hinges for windows and doors; with extensive experience on warehouse management, in-house material flow control and associated safety requirements.

Aim of the project

Overall: increase autonomy level of the drone, require less pilot “active” supervision

- Assessment of current AI-based methods for object detection and localization.
- Fail-safe solution to a safety certification-oriented scenario of interest.



Work plan/schedule/implementation

Table 4: Overview of work packages

WP No.	Work package title	Duration (month)	Start MM/YY	End MM/YY	Planned result
1	Project Management	12	09/21	08/22	Reaching the project objectives
2	Requirements and evaluation AI-enabled situation aware drone operation	12	09/21	08/22	Requirements towards methods is established. Training data is prepared. First evaluation of methods in the context of the verification scenario performed.
3	AI-based situational awareness	7	10/21	04/22	First concepts for AI-based situation awareness implemented and tested
4	Autonomous drone flight monitoring and safety	5	02/22	06/22	First concepts for Autonomous drone flight monitoring and safety implemented and tested
5	Dissemination	10	11/21	08/22	Dissemination of project results, Roadmap for required further research and development activities established

Intended utilization

- Regulatory obstacles: regulatory circumstances require a human as an observer for the drone operation. Realization of workshop(s) with stake-holders.
- Kick-start further research and development towards the deployment of the drone system envisioned in AI-Flight for the industrial task of inventory-taking at ROTO.

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