INTRODUCTION TO EGENIOUSS

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OBJECTIVES, IMPACT, AND BENEFITS

Project Objectives

The primary objective of the egeniouss project is to develop a novel real-time visual localization framework for satellite-based navigation that significantly enhances the accuracy and robustness of positioning and navigation in challenging urban environments. This project contributes to the standardization of EGNSS and visual localization technology in the drone industry. This project contributes to the standardisation of EGNSS and visual location technology, which can be applicable in multiple sectors.

Expected Impact

The expected impact of egeniouss, which offer greater accuracy in navigation and positioning, lies in multiple future applications such as autonomous vehicles, drones and smart city infrastructure, making the overall transport system safer and more efficient, especially relevant for some sectors such as healthcare, where speed and accuracy in delivering organs, blood or emergency items is key. Geospatial data for urban planning and environmental monitoring will benefit from increased reliability, accuracy and availability.

This is particularly important in urban areas where traditional satellite-based navigation can be disrupted, making it difficult for drone services such as last-mile delivery to be fully deployed

Benefits to the General Public

The advancements made by the egeniouss project will provide numerous benefits to the general public, such as:

- Enhanced safety and efficiency in transportation systems.
- Improved accuracy of location-based services.
- Better management and planning of urban spaces.
- More effective environmental monitoring and disaster response.

Drone Use Case

In the egeniouss project, drones play a crucial role in demonstrating the capabilities of this new visual localization framework. The technology aims to revolutionize navigation and positioning by providing a visual localization cloud service coupled with European GNSS to elevate the accuracy and reliability of drone navigation to a higher standard.

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For CATUAV, the primary field of application is drones, also known as Unmanned Aerial Systems (UAS). The egeniouss technology will be integrated into UAS applications such as drone delivery, where precise and reliable positioning is crucial. This integration ensures safe and efficient drone operations, especially in urban environments where GNSS signals may be unreliable. The redundant positioning solution provided by egeniouss will allow drones to overcome these challenges, enhancing UAS operations and paving the way for standardization in autonomous systems.

The egeniouss consortium is formed by a diverse group that combines expertise in **geodesy, photogrammetry, computer vision, satellite navigation, and machine learning** to develop a cutting-edge visual localization framework

Focus on Last-Mile Delivery and Sustainability

One of the key applications of drones within the egeniouss framework is in last-mile delivery. The enhanced localization capabilities allow drones to navigate complex urban environments accurately, ensuring timely and efficient delivery of goods. The correct use of drones not only improves delivery times and customer satisfaction but also reduces the carbon footprint by minimizing reliance on traditional delivery vehicles.

Furthermore, the use of drones for environmental monitoring contributes to sustainability efforts by providing accurate data for assessing environmental changes and implementing appropriate measures. Drones can cover large areas quickly and efficiently, making them ideal for monitoring ecosystems, wildlife habitats, and areas affected by natural disasters.

The biggest impact for citizens will be an improvement in the safety and reliability of drone operations, which is crucial for any aerial application and much needed in the current state of the art of drone operations in cities. This technology can lead to more widespread adoption of drone-based delivery services, particularly important in scenarios such as emergency medical deliveries or time-sensitive deliveries in urban areas. Overall, egeniouss contributes to enhancing the quality of life by making advanced and reliable navigation services accessible to everyone.

Conclusion

The egeniouss project represents a significant step forward in the field of visual localization and positioning systems. Through the collaboration of a diverse consortium and the support of the Horizon Europe programme, the project aims to deliver cutting-edge technologies that will benefit various sectors and the general public. The use of drones in the project showcases the potential for innovative applications that enhance efficiency and sustainability.

Specifically for CATUAV and the drone use-case, integrating egeniouss technology into drone delivery operations enhances safety and reliability, which is essential for achieving regulatory compliance and market acceptance. This opens new business opportunities and contributes to the standardization of EGNSS and visual localization technology in the drone industry. The collaborative nature of the project allows consortium members to leverage interdisciplinary expertise, strengthening their positions in the industry and driving advancements that benefit both their companies and the broader UAS industry.

Description of the Consortium

The egeniouss consortium is formed by a diverse group that combines expertise in geodesy, photogrammetry, computer vision, satellite navigation, and machine learning to develop a cutting-edge visual localization framework. The consortium includes the AIT Austrian Institute of Technology as the coordinator; three scientific partners: the TU Braunschweig, GeoNumerics, and Crayon; dissemination, exploitation, and communication partner Centro Español de Logística (CEL); and three use-case partners: Beemo (cycling navigation), OpenGis.ch (surveying positioning), and CATUAV (drones positioning and navigation).

Funding Mechanism

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