DEMONSTRATING SKYDIO X10 3D SCANNING FOR FORENSIC ROAD ACCIDENT INVESTIGATIONS

LOCATION:
South Africa, Gauteng

YEAR OF PROJECT
2025

PROJECT FOCUS:
Demonstration of the Skydio X10 during their Advanced Crash Investigation course

CLIENT:
IBFSA (Pty) Ltd

BACKGROUND

In forensic and accident reconstruction, accurate documentation of a crime or accident scene is critical. Traditional methods rely heavily on manual measurements, photographs, and eyewitness reports, which can be time-consuming, prone to human error, and sometimes unsafe in active road environments. Emerging drone technology, combined with photogrammetry, offers new opportunities for rapid, accurate, and detailed 3D scene documentation.

OBJECTIVE

IBFSA (Pty) Ltd invited us to conduct a demonstration of the Skydio X10 during their Advanced Commercial Crash Investigation course. The purpose of the session was to show the students how the Skydio X10 can be used in practical accident investigations, capturing aerial data autonomously and transforming the scene into an accurate 3D model.

METHODOLOGY

1. **Preparation**
   - The Skydio X10 was introduced to the class, highlighting its autonomous navigation and obstacle avoidance capabilities.
   - A simulated road accident scene was prepared, including staged vehicle positions and evidence markers.
2. **Demonstration**
   - The drone was flown over the scene using automated flight planning.
   - Multiple overlapping images were captured from various altitudes and angles.
   - The onboard AI assisted in ensuring complete coverage of the area without requiring constant manual control.
3. **Processing**
   - Images were processed onboard the controller to generate a 3D model
   - There is also an option to process the images using **photogrammetry software like DroneDeploy** to generate a 3D point cloud and textured mesh.
   - The final 3D reconstruction allowed the students to virtually revisit the accident scene, measure distances, and analyze details from multiple perspectives.

RESULTS

- **Accuracy:** The 3D model captured fine details of the accident scene, including vehicle positions and roadway markings.
- **Efficiency:** The scanning process took significantly less time compared to manual scene documentation.
- **Safety:** Investigators could document the scene without prolonged exposure to hazardous environments (e.g., busy roads).
- **Learning Impact:** Students were able to engage with a realistic digital twin of the accident scene, reinforcing concepts of evidence preservation and spatial analysis.

DISCUSSION

The demonstration showed how integrating Skydio X10's autonomous drone capabilities with photogrammetry provides a reliable, scalable solution for forensic accident reconstruction. By enabling quick, accurate, and detailed documentation, this technology can improve investigative workflows and potentially enhance courtroom presentations with immersive 3D visualizations.

CONCLUSION

The Skydio X10 3D scanning demonstration successfully illustrated the future of forensic crime scene documentation. Students observed how drone-based photogrammetry offers significant advantages in **speed, accuracy, safety, and evidentiary value** compared to traditional methods. This technology has the potential to become a standard tool in forensic and accident investigation practices.

For more information on this case study and/or general info on Dwyka Mining Services, send us an email, or visit our website.

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