

Advanced 3D Modeling Using ROVs and Photogrammetry for Nuclear Inspections

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The integration of Remotely Operated Vehicles (ROVs) with advanced imaging technologies allows for the precise 3D modeling of underwater components in nuclear facilities. By utilizing photogrammetry, which constructs 3D models from 2D images, ROVs can capture detailed and accurate visual data, essential for creating a digital twin of the reactor components, for example.

This 3D model dramatically enhances the usefulness of inspection data, enabling thorough analysis and early detection of potential issues, such as corrosion or structural weaknesses, but photogrammetry's key benefit is the ability to monitor issues over time to see if they maintain or worsen, and then use that data to extrapolate outwards in time for modeling purposes.

The ability to remotely inspect reactors not only improves safety by minimizing human exposure to radiation but also ensures that inspections are conducted with unparalleled accuracy.

For murky water operations where underwater visibility is impaired, we utilize sophisticated software in post-processing to stitch sonar video together to create sonar orthomosaics for a complete view of underwater structures that probably haven't had eyes on them since they were built.

In summary, the use of ROVs for photogrammetry and orthomosaics to build representative 2D and 3D images delivers detailed, accurate inspection data that is greatly superior to conventional means. This approach enhances safety, reduces inspection time, and provides critical insights necessary for effective maintenance and operation of nuclear facilities.

Bio

Andrew has been the Senior Account Manager with Deep Trekker for more than five years. He brings a strong background in power generation and regularly consults with his clients to provide sophisticated approaches to robotic inspections. Always striving to drive inspection trends and applications, Andrew is dedicated to testing new use-cases and sharing those experiences with new customers to drive robotic adoption in nuclear.