



Contribution ID: 75

Type: **Poster**

3-D visualization of radioactive substances by integrating gamma-ray imaging technology and Structure from Motion

Monday, 8 July 2019 17:43 (2 minutes)

The Fukushima Daiichi Nuclear Power Station (FDNPS), operated by Tokyo Electric Power Company Holdings, Inc., went into meltdown after the large tsunami caused by the Great East Japan Earthquake of March 11, 2011. Radiation distribution measurements inside the buildings of the FDNPS are indispensable to execute the decommission tasks because the information would be important to predict risk to workers and to decrease the amount of radiation exposure.

We have developed a method for integrating a three-dimensional (3-D) image of radioactive substances obtained by measuring with a Compton camera into a 3-D photo model of the experimental space created using photogrammetry. By measuring a radioactive substance from a plurality of viewpoints using the Compton camera, an image of the radioactive substance can be three-dimensionally reconstructed. Here, information on the self-position and posture of the Compton camera is required for image reconstruction. In this work, we developed a method to automatically acquire the information using Structure from Motion (SfM) and integrate the image of radioactive substances into the constructed 3-D photo model. This method will be effective for remote visualization of radioactive substances using a robot equipped with a gamma-ray imager such as the Compton camera inside the buildings of the FDNPS.

Primary authors: Dr SATO, Yuki (Japan Atomic Energy Agency); Dr TORII, Tatsuo (Japan Atomic Energy Agency)

Presenter: Dr SATO, Yuki (Japan Atomic Energy Agency)

Session Classification: Poster Exhibition 1: Posters ID 1 - 80, chair: Christer Frojdh

Track Classification: general