

Detecting and Creating a 2D Heatmap of Radiation Hot Spots via Unmanned Ground Vehicle

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Author Note: Cadets Hales and Lee are fourth-year students at the United States Military Academy working on the first year of the RADBOT capstone team. Cadet Hales is an Operations Research major and Cadet Lee is a Systems Engineering major. Mr. Edward Londner, Visiting Professor in the Department of Systems Engineering, is the group's Systems Engineering advisor. Mr. Londner has provided a significant amount of guidance and assistance to the cadet team for this project. Thank you to all the team's advisors from Electrical Engineering and Computer Science, Physics and Nuclear Engineering, and Civil and Mechanical Engineering for their assistance and support. *This paper was short selected for "Top Paper" of the proceedings.*

Abstract: The Army's chemical, biological, radiological, nuclear, and explosives (CBRNE) units respond to the any threat involving CBRNE elements. Their missions often involve the search and identification of radiation sources in a compromised facility. A major concern with this mission is the survivability of the Initial Entry Team, who is tasked with surveying the volatile indoor environment for data. The creation of a system to assist in, and expediate, the process of initial entry will greatly increase the health and welfare of the team. In order to localize and detect radiation in a potentially contaminated indoor environment, our team will develop the RADBOT, an unmanned, tethered robot that can detect and map radiation. This paper will summarize the research, design, testing, and results for the development of the RADBOT system.

Keywords: Radiation, Detection, Robot, Unmanned, Tethered