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RESPONSIBLE AI IN SPACE: UNPACKING CURRENT INDUSTRY PRACTICES AND REGULATORY TRENDS

Abstract

The application Artificial Intelligence (AI) systems within the space industry represents the cutting edge of technological innovation. An abundance of use cases is emerging, encompassing activities including Earth Observation imagery analysis, automated spacecraft manoeuvring, mission planning and many more applications in both scientific and commercial spheres. While promising to enable new capabilities and opportunities, they could also cause harms to individuals, organisations, and the environment. These harms present challenges related to regulation, policy, and ethics that must be addressed, bringing the concept of 'Responsible AI' to the forefront of ongoing regulatory and policy conversations. This paper outlines a two-stage research process which investigates trends within the space industry related to the regulation of AI systems and current industry approaches to the implementation of Responsible AI practices. The first stage entails a quantitative survey of professionals in the space industry quantifying knowledge and attitudes towards AI regulation, responsible AI, and opinions on how such topics should be handled going forward. This survey aims to provide a broad, representative sample of the space industry in order to understand the current practices and sentiment towards the regulation of AI systems and the application of responsible AI practices. The second stage explores the knowledge and opinions of professionals working with AI systems in the space industry and experts knowledgeable in AI regulation in a qualitative, semi-structured interview format. These interviews uncover granular insights on the areas experts believe are important in tailoring AI regulation, responsible AI principles and practices, and risk mitigation to the space sector. The study focuses on the Australian space sector. However, due to the inherently international nature of the space and AI industries, respondents and interviewees from all around the world are included in the research process. By gathering a quantitative and representative survey dataset, combined with a qualitative and nuanced interview dataset, this paper aims to inform ongoing discourse surrounding the regulation of AI systems in the space domain. It highlights the need for considered and tailored regulatory approaches that stimulate the adoption of AI in the space industry while mitigating any associated risks, aiming to achieve a balance between the interests of developers, users, and regulators of AI systems alike to obtain broader acceptance of regulation and adoption of Responsible AI practices throughout the space sector.

Note: The relevant datasets have already been gathered.