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(19) **United States**(12) **Patent Application Publication****Kim et al.**(10) **Pub. No.: US 2023/0232107 A1**(43) **Pub. Date: Jul. 20, 2023**(54) **INFRASTRUCTURE AND VEHICLE FOR COMMUNICATING WITH THE SAME****H04N 23/61** (2006.01)**G08G 1/017** (2006.01)(71) Applicants: **Hyundai Motor Company**, Seoul (KR); **Kia Corporation**, Seoul (KR); **AJOU UNIVERSITY INDUSTRY-ACADEMIC COOPERATION FOUNDATION**, Suwon-si (KR)(52) **U.S. Cl.**CPC **H04N 23/695** (2023.01); **H04N 7/183** (2013.01); **H04N 23/61** (2023.01); **G08G 1/0175** (2013.01); **G06V 20/588** (2022.01)(72) Inventors: **Hyung Joo Kim**, Busan (KR); **Yong Jin Kwon**, Suwon-si (KR); **Jin Yeong Heo**, Suwon-si (KR)

(57)

ABSTRACT

Provided is an infrastructure and a vehicle for communicating with the same. The infrastructure recognizes a first area and a second area, and when a proportion of the second area of the image information is greater than or equal to a reference proportion, controls first and second adjusters to change a photographing area of a camera. The vehicle recognizes a hidden area, when a proportion of the hidden area is greater than or equal to a reference proportion, transmits an adjustment command of the first camera to the infrastructure, and when the proportion of the hidden area is less than the reference proportion. The vehicle matches an image of the hidden area to second image information of the second camera to generate a top view image.

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