CHANGE DETECTION AND QUANTIFICATION FOR THE PICTURE ARRANGEMENT TASK

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ABSTRACT

The Picture Arrangement task has its roots in the Weschler Adult Intelligence Scale (WAIS) intelligence test. In this specific puzzle, a series of images are provided, and an individual is asked to rearrange the images in order to form a plausible story. A system to solve these tasks using knowledge-based artificial intelligence already exists. However, a knowledge-based technique that can solve any Picture Arrangement task is encumbered by the need for a very large knowledge base containing information about any topic a puzzle might possibly cover. Our technique seeks to provide an alternative, knowledge-free solution. By identifying the objects present in a series of images and analyzing their movement and interaction, we can provide a solution which, while not provably correct, will be very close to the correct solution 50% of the time. This can be done quickly and without any real understanding of the meaning of the objects in the images. This process is enabled by coloring the black and white images typically found in the Picture Arrangement task to easily identify the boundaries of objects. Our system, while not complete, provides a viable and even complimentary alternative to the knowledge-based approach to the Picture Arrangement task already in existence.