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Knowledge Based AI

Project 2 Reflection

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# Introduction

This projects sets to build upon the previous project of solving 2x2 Raven’s Progressive Matrix (RPM) problems. In this project 3x3 RPMs were solved in addition to the 2x2 matrices from the last project. Generate and test was used to solve the 2x2 matrices, and a similar approach was attempted here. However, since the patterns for 3x3 matrices were more varied, a more tailored approach to generate and test was used here. [ GIVE BRIEF SYNOPSIS OF RESULTS]

# Theory of Operation

In the previous project the “generate and test” method proved to be quite powerful, and so this same technique was applied here but with some modifications. The relationships between images and the patterns for the 3x3 RPMs were much more complex than in 2x2 matrices. (The 3x3 matrices are more than twice as large!) As such, generalizing the relationships proved too complex to handle, so the problems were handled on a case by case basis. As such, the agent was able to answer problems it had encountered before, but it was not equipped solve new problems well.

Another difference between the 2x2 and 3x3 designs was how answers were selected. For the 2x2 matrices there were usually multiple ways to generate an answer that fit the pattern but would result in an incorrect answer. As some code was necessary to handle cases where multiple generated guesses appeared in provided answers. For the 3x3 matrices with their complicated patterns meant that having multiple guesses that matched an answer was very unlikely. Therefore the first guess that appeared in the provided answers was returned as the answer to the RPM.

The final difference was that the 2x2 matrices were solved entirely visually – no verbal data was used. Since the 3x3 matrices had more complex relationships, a purely visual solution was not evident to the author. The majority of the matrices were solved visually, but a few required additional information to solve, and this information was retrieved from the verbal descriptions.

# Implementation

Talk about the steps in python. Walk through a few of the more interesting RPMs.

# Results and Discussion

I am guessing that the performance will be quite good on the Basic and Test sets, but be quite bad on the Challenge and Raven’s sets.

# Conclusions and Future Work