* Search strategy analysis has been around for a long time in visuo-spatial learning and memory tests (what are some earliest papers?). These began using qualitative measures of search path, and have developed into categorization using quantitative measures of performance. Search strategy analysis complements more commonly used measures of learning performance, and provides a more detailed analysis of visuo-spatial learning. The number of studies that employ search strategy analysis, however, is still relatively low.
  + Why is this the case?
    - Search strategy analysis doesn’t provide anything useful beyond traditional measures of performance (latency, distance etc)?
    - There is a gap in the tools currently available to employ search strategy analysis given it may require custom analyses within line based coding. This would necessitate the development of a user-friendly GUI, to aid in the use of search strategy analysis.
    - It isn’t clear how the parameters are obtained for the classification of different strategies, and how the parameters should be optimized given differences in apparatus design and test procedure.
* Another issue is that at some point it is likely that the search strategy categorization will eventually be added to the commercially available systems with updates, but this will likely requiring upgrading the software. Which will cost money, thus discouraging search strategy analysis.
* This project addresses the above issues. A user-friendly GUI is developed, and the usefulness of search strategies is demonstrated with several examples.

**More basic learning and memory stuff:**

* In normal mice and rats, can we learn anything new about search strategies that we don’t already know? One thing is the developmental pattern of search strategies use during learning. What is the typical progression of strategies? Which strategies can be skipped? If a certain strategy is used, is it harder to switch to a more efficient strategy? What strategies are best predictors of good memory performance?

**Are search strategies useful?**

* Why are search strategies important?
* **Adoption of non-spatial strategies (looping etc) can lead to improved performance on the water maze.**
  + There are many reasons for why a mouse/rat will show impairments in learning

and these may be due to non-cognitive factors.

* + - Motor deficits, visual deficits, actual visuo-spatial learning impairment, hypothermia, passive floating, excessive anxiety
  + Can search strategies identify why a mouse/rat is performing poorly due to non-cognitive factors?
  + Can search strategies be used to gauge differences in search strategy accuracy? Differences in learning ability?

**What parameters should be used for search strategy analysis?**

* Search strategy schemes differ based on the parameters to classify strategies. How reliable are these strategies when compared to each other using the same data-set?
  + It isn’t really clear how the parameters for each strategy should be changed based on the apparatus/experiment parameters.
    - What could influence the values of the parameters?
      * Total length of the trial
      * Size of the pool
      * Location of the platform relative to center of pool/wall of pools

**Where can we get data for this paper?**

If we collaborate with other labs, we can potentially get a ton of data looking at different scenarios. This is similar to Jordan’s paper looking at the development of the Dehydrocorticosterone assay (they used different examples from different species).

**Methods**

Navigating the program

Search Strategy Analysis

Heatmap

**Results**