

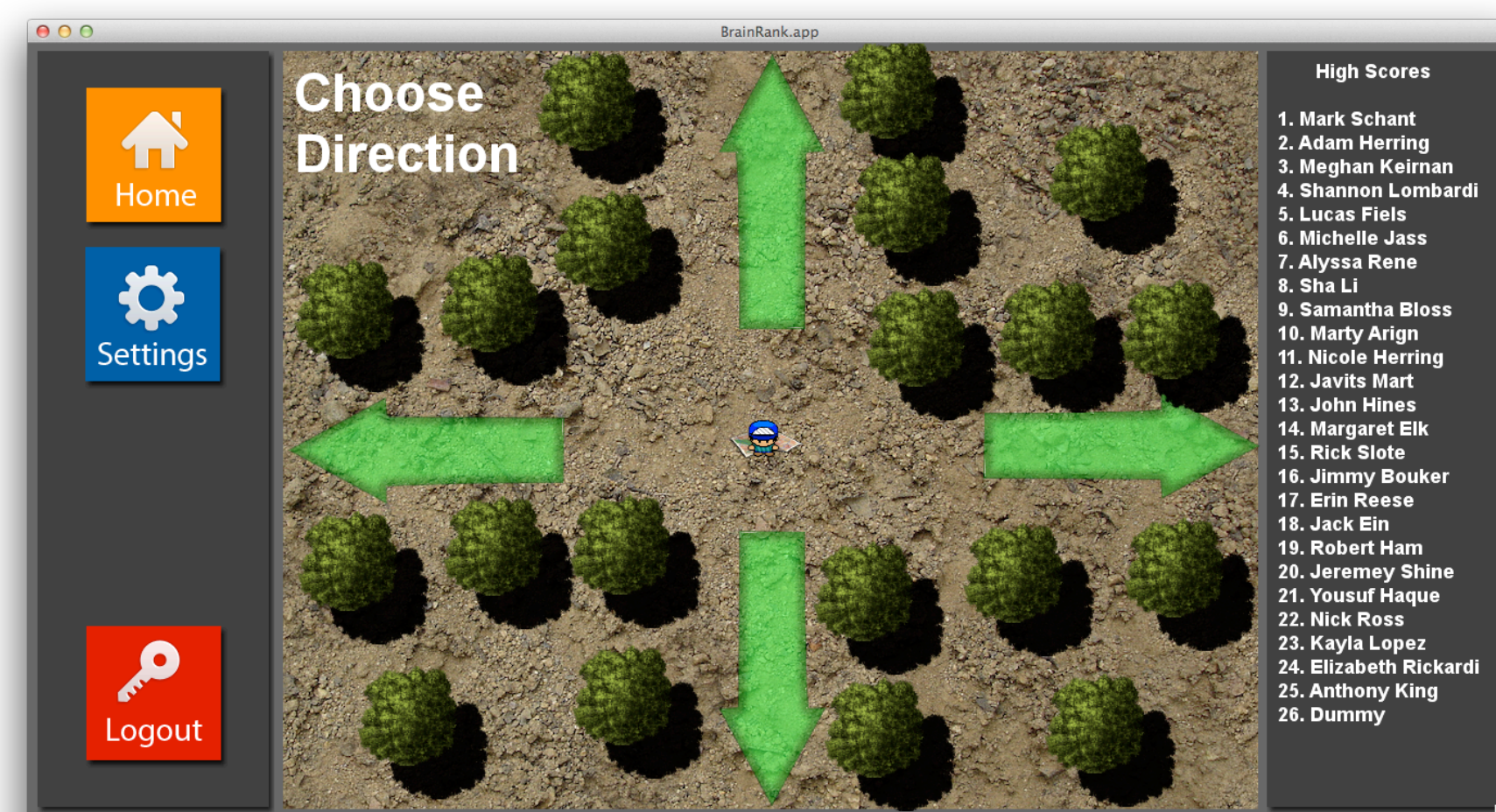
BrainRank

Abstract— Fluid Intelligence relies on working memory, and it is prominent in problem-solving activities. It was thought to be immutable in adulthood until recently, but new studies have shown that playing an N-Back memory game every day for several weeks increases a user's performance on standard Fluid Intelligence tests, regardless of age. But most variations of the game are tedious, and many players become bored and stop practicing before there is any significant gain in their working memory capacity.

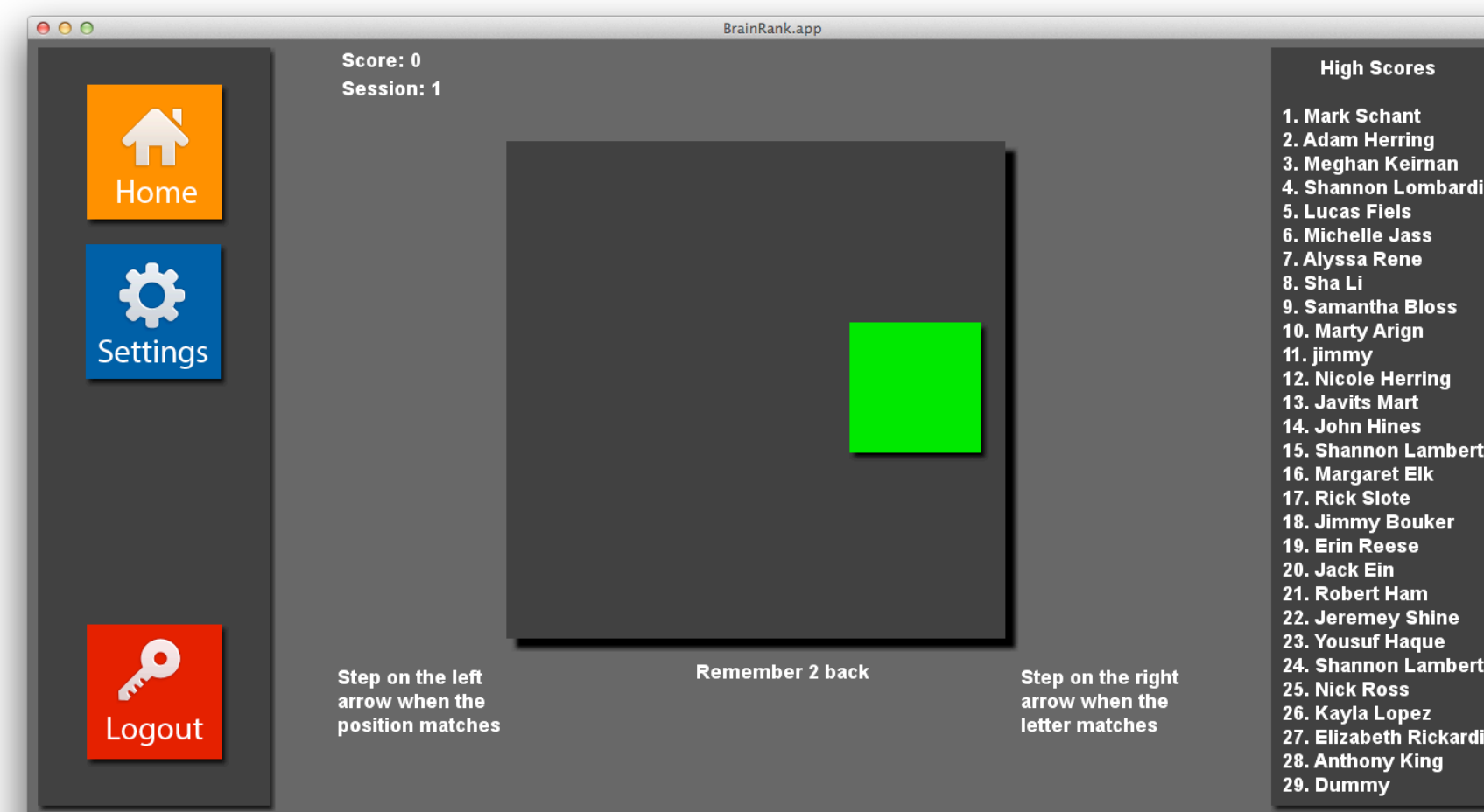
The BrainRank application seeks to increase users' time on task by introducing a novel kinesthetic interface to the N-Back game, in addition to leveraging established videogame motivators, such as leader boards and achievement badges. New research has also shown that physical exercise enhances memory performance. The objective of the BrainRank project is to assess the impact of sustained physical exercise on working memory playing N-Back games through a tangible computer interface. The BrainRank application records both user performance data and time on task for comparison to classic versions of the N-Back game that use a keyboard or mouse for input.

N-Back Variations

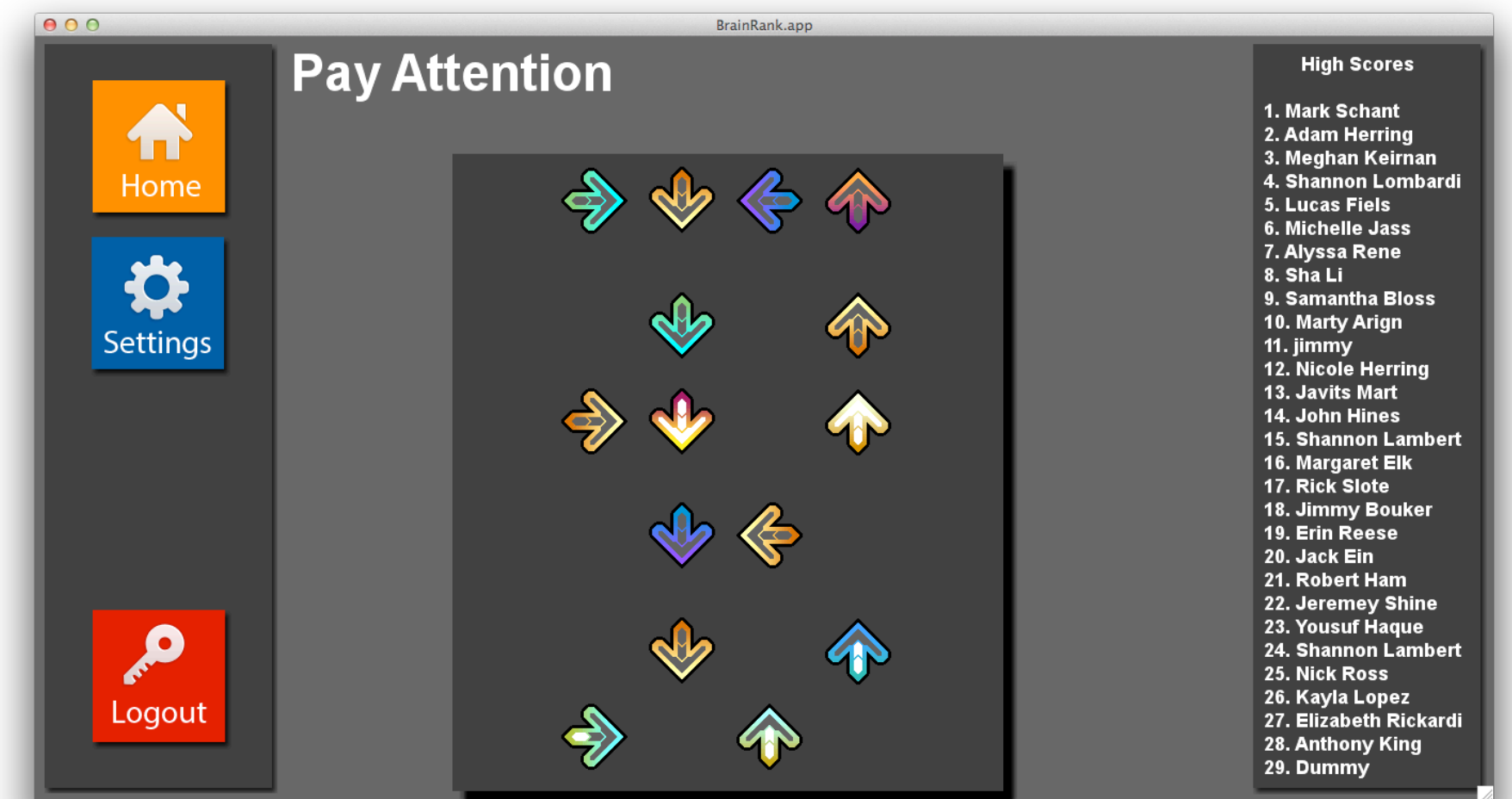
Lost in the Woods – Players are presented with a list of N directions and they must remember them in the order they are shown. After the last direction is shown they are asked to re-enter the directions in the correct order.



Dual N-Back – The classical Dual N-Back game is presented to the user. Emphasis in this module is speed of response, because the audio-visual pairs are presented with increasing frequency.



Dance Back – N Dance moves will be presented to the player in a particular sequence. The player is then told to repeat the dance steps in order, and tempo in which they were presented.



BrainRank at URECA

