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Guiding brine shrimp through mazes by solving reaction diffusion equations. KRISHMA SINGAL, FLAVIO FENTON, None — Excitable systems driven by reaction diffusion equations have been shown to not only find solutions to mazes but to also to find the shortest path between the beginning and the end of the maze. In this talk we describe how we can use the Fitzhugh-Nagumo model, a generic model for excitable media, to solve a maze by varying the basin of attraction of its two fixed points. We demonstrate how two dimensional mazes are solved numerically using a Java Applet and then accelerated to run in real time by using graphic processors (GPUs). An application of this work is shown by guiding phototactic brine shrimp through a maze solved by the algorithm. Once the path is obtained, an Arduino directs the shrimp through the maze using lights from LEDs placed at the floor of the Maze. This method running in real time could be eventually used for guiding robots and cars through traffic.

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None

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