Group 3

Vehicles: Assignment 1

Following Braitenberg’s logic, the code is designed so that for vehicles 2a and 2b the sensor closest to the stimulus will excite activity in its corresponding motor, while for vehicles 3a and 3b, the sensors respectively inhibit activity. Proportional excitatory activity was programmed as equating the stimulus value with the motor activity, while inhibitory activity of the motor was programmed as (100% motor speed - stimulus value).

Consequently, as the vehicle’s “nervous system” is wired in parallel according to Braitenberg’s diagrams, the code employs a multithreaded design in the aim of maximizing accuracy, while also allowing for the elimination of explicit logical control and branching statements (Fig 2). Each execution thread, running concurrently within a while true loop, governs the vehicles motors by a stimulus modulated by an activation function, denoting inhibition or excitation, to facilitate tropotaxis (Fig 3).

That said, vehicle 3a could not reach a full stop in front of a stimulus unless there were stimuli directly in front of each sensor, so we amended the program in 3a to go half the speed of vehicles 2a and 2b. This allowed for a more noticeable decrease in speed when approaching the stimulus.

