Mega Bot

An autonomous bot that attacks and defends

Data Collection

Mega Bot searches for bullets and alive bots within a 100-pixel radius. Then it increments the threat intensity in the x and y-axes depending on where the objects lie.

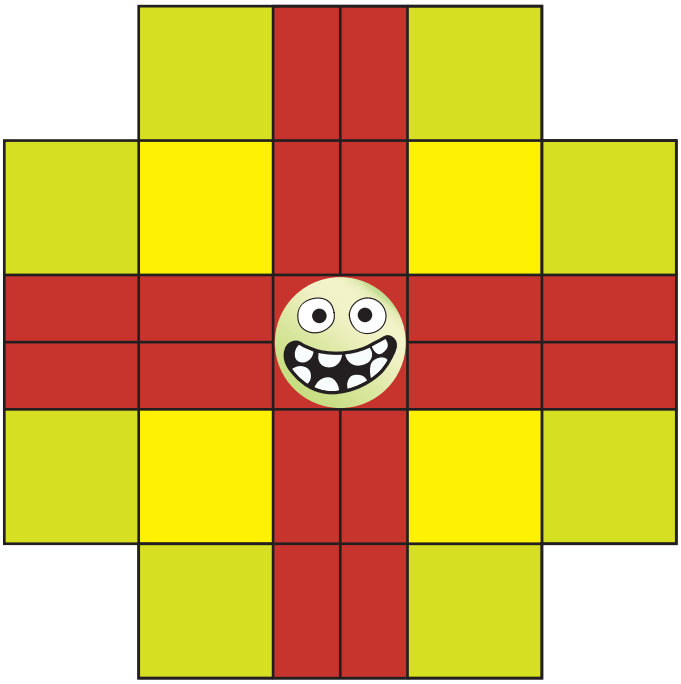
Threat Analysis

Depending on which direction has a more significant threat and what moves are possible, Mega Bot chooses the best move to dodge the threat successfully.

Attack Algorithm

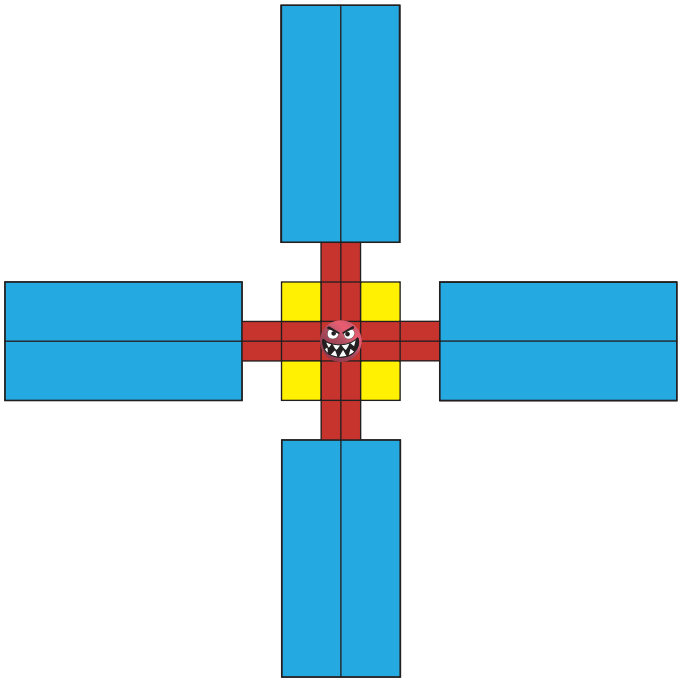
If there are very few threats, Mega Bot activates its attack algorithm. This function allows it to shoot targets when they're in range, move closer to bots that are of no direct threat, and search and destroy the nearest bots. Mega Bot is restricted from using this function in consecutive moves, giving the defence the priority.

Bullet Threat Identification Map



Small Threat | Medium Threat | Large Threat

Bot Threat and Attack Map



Attackable | Medium Threat | Large Threat

Efficiency

Threat data collection was conducted in a small, clearly defined range so that irrelevant or duplicate information does not take up processing time. In threat analysis, all variables from other classes and absolute value functions were called only once so that checking if-statements was efficient. Lastly, the attack algorithm was programmed to move towards shooting distance of the closest bot in the least number of moves so that more bots can be targetted in a single round.

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