Using the Intelligent Trial and Error (IT&E) algorithm, robots, like animals, can quickly adapt to recover from damage.

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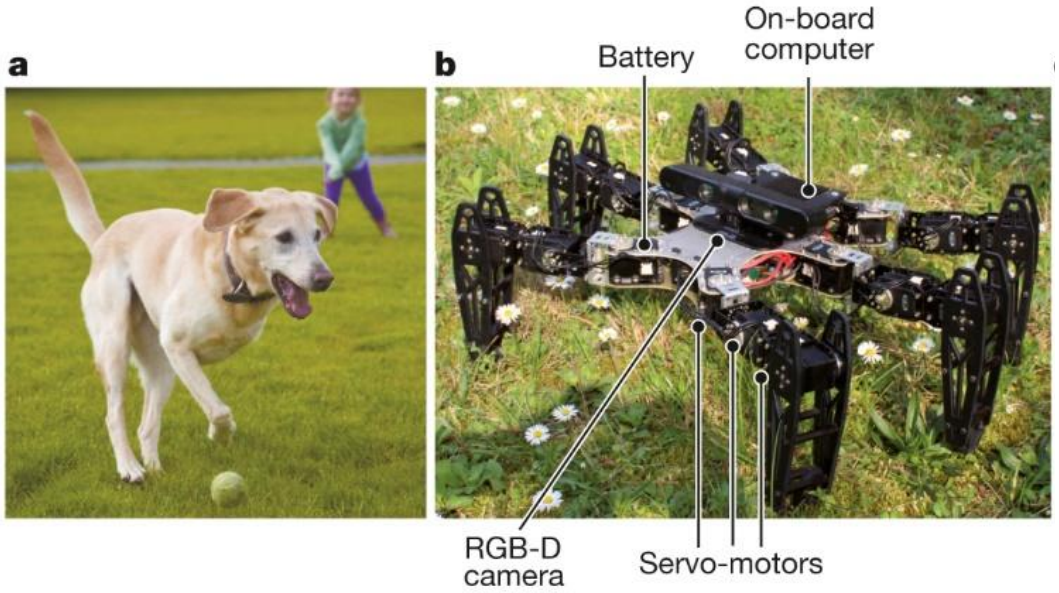

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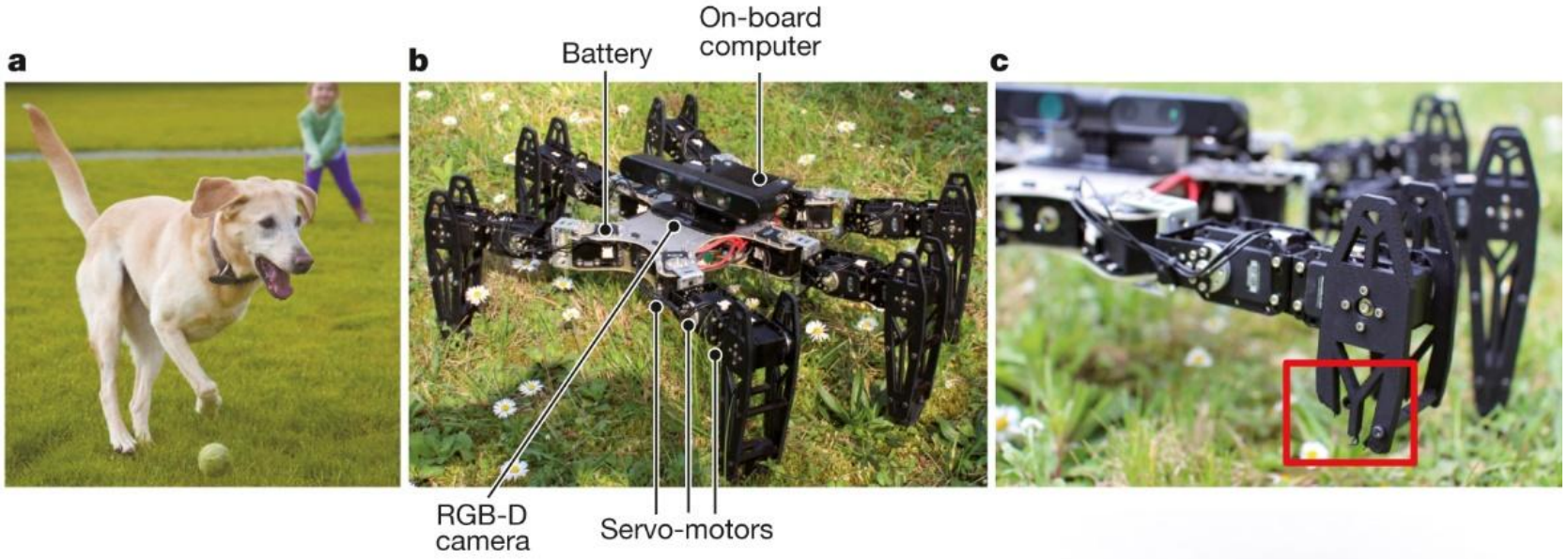

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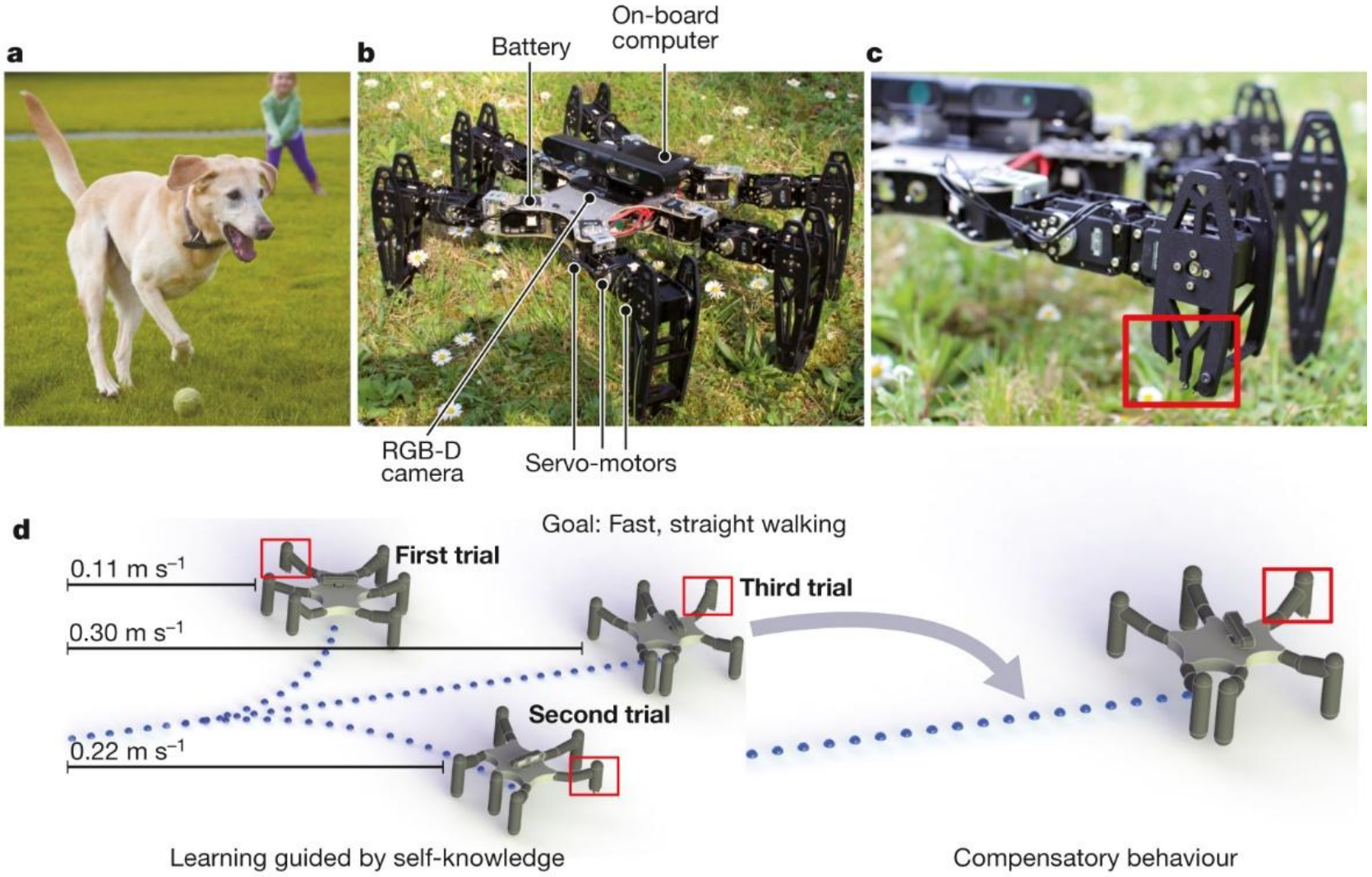

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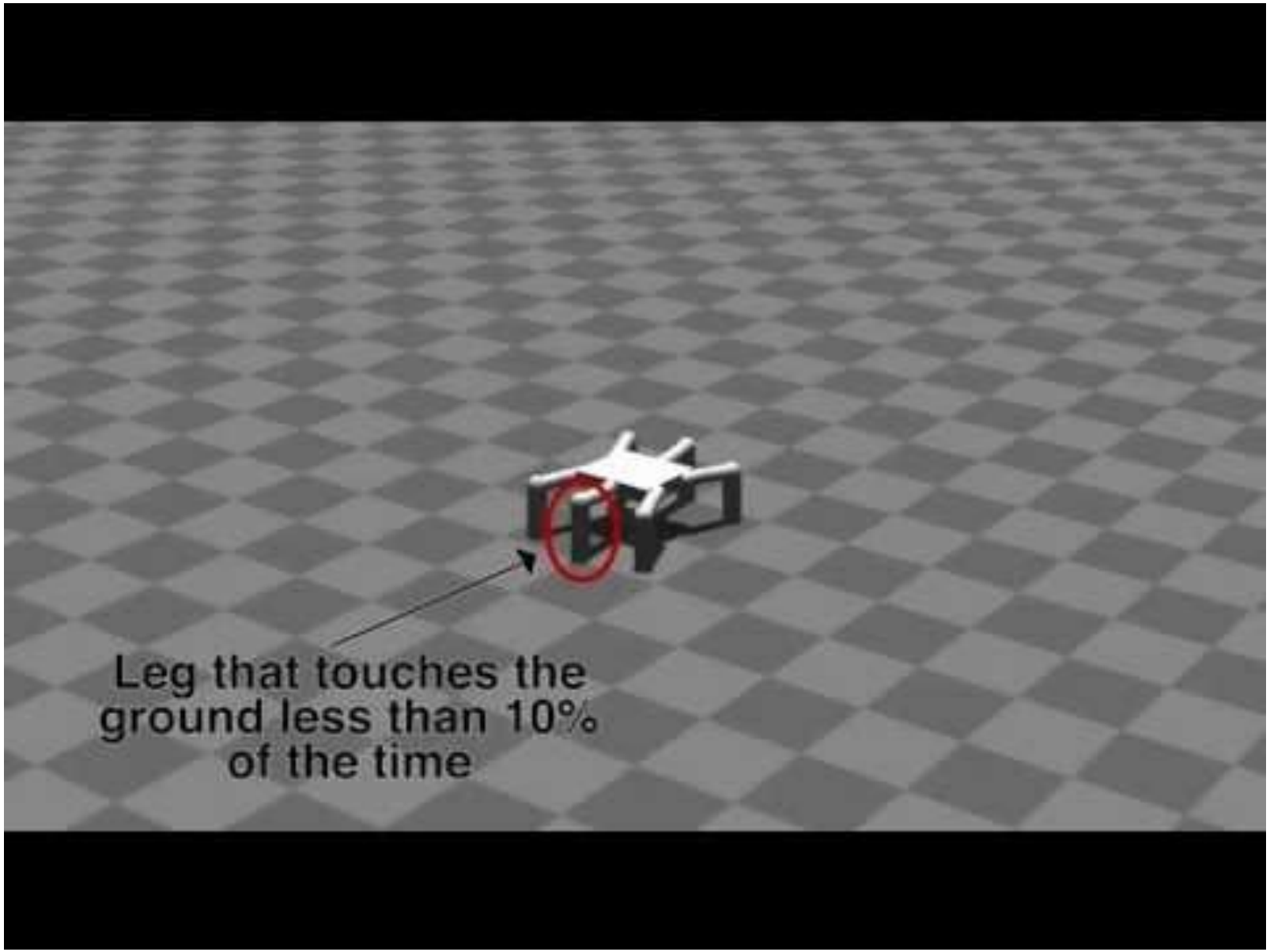
Robots that can adapt like animals.



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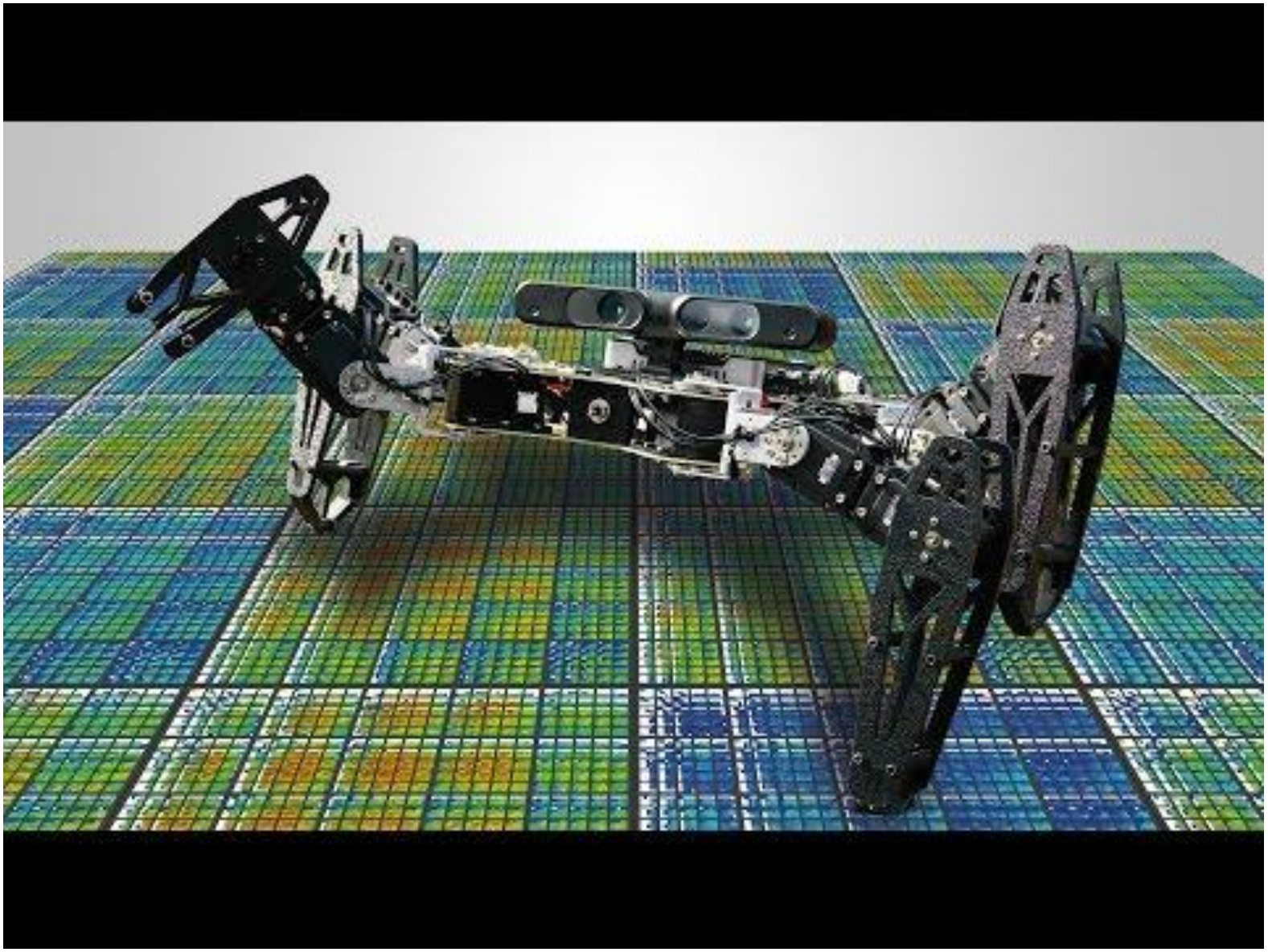

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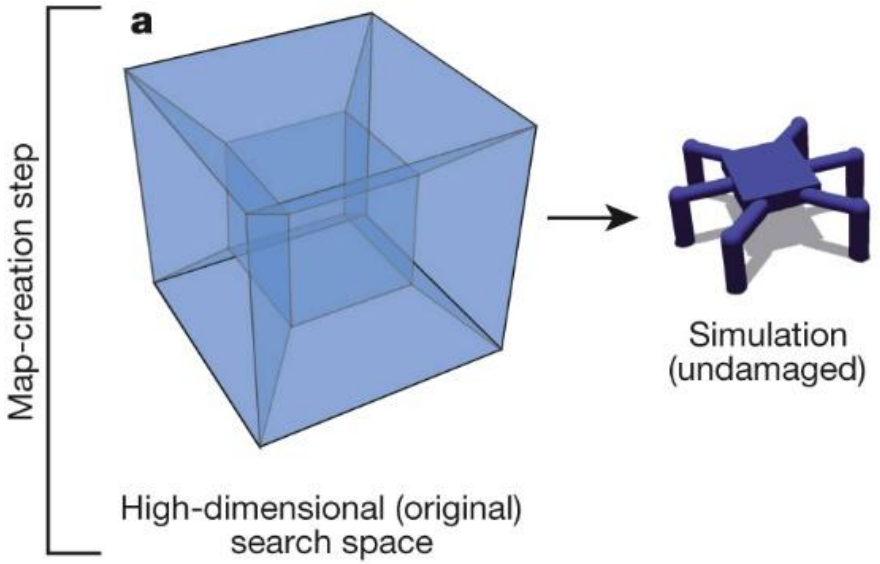
The two steps of IT&E.



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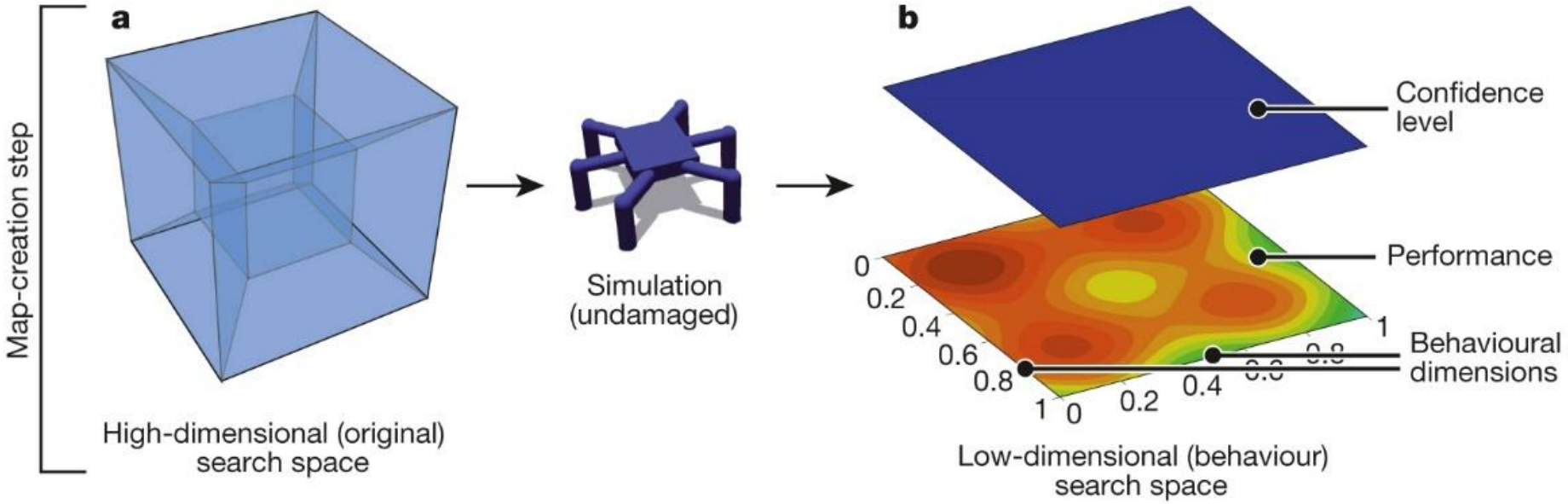

Position of the controller defined by the genotype

The controller search space is remapped into a low-dimensional search space described by behaviour.

Position of the controller is defined by the phenotype.

The coordinates of the controller in the new search space can be percentage of time each leg was positioned in the ground

The color represent the performance. Hot color represent high fitness.

Every point in the behavior space, as a point in the confidence space, which express the controller crossing the reality gap.

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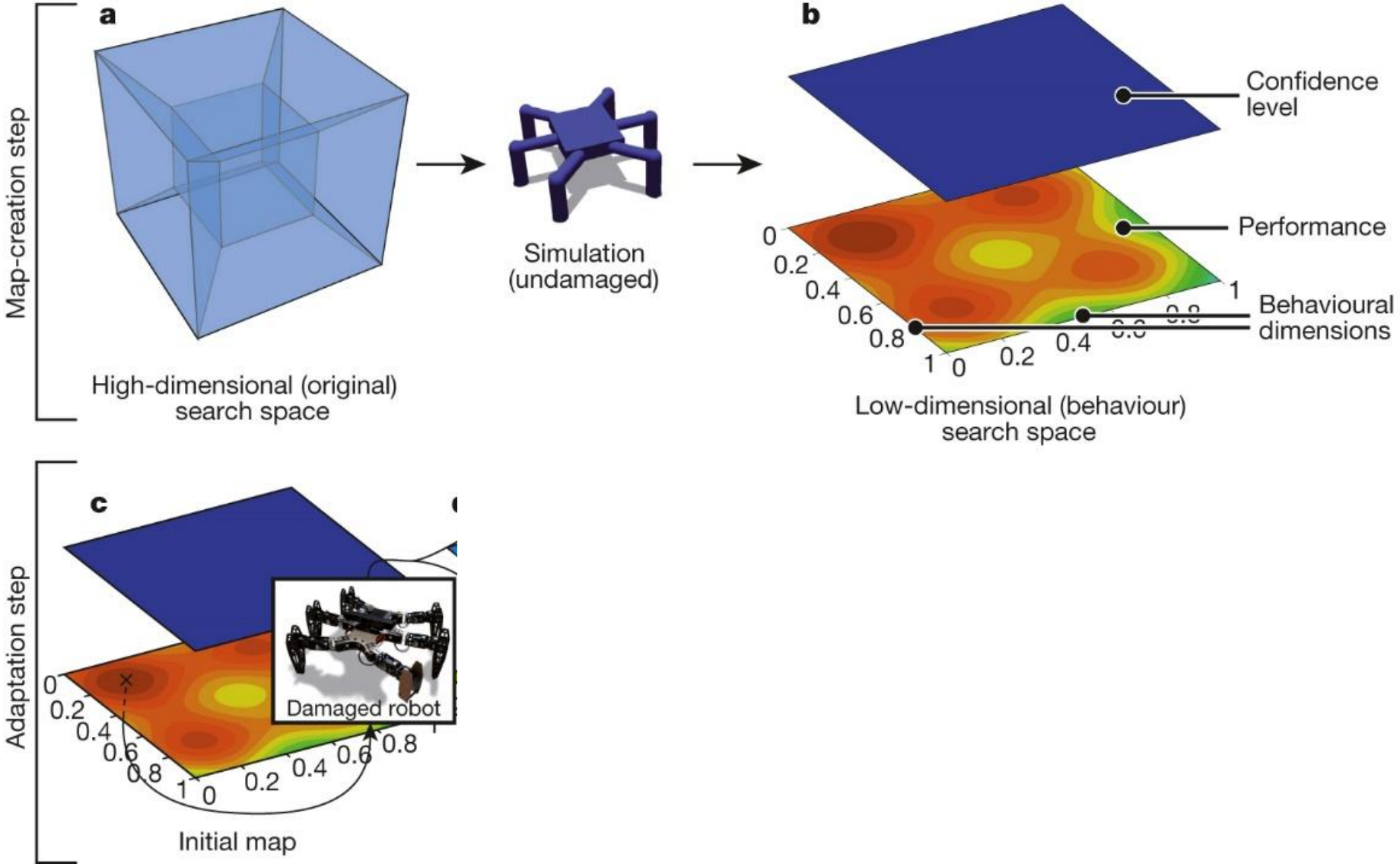

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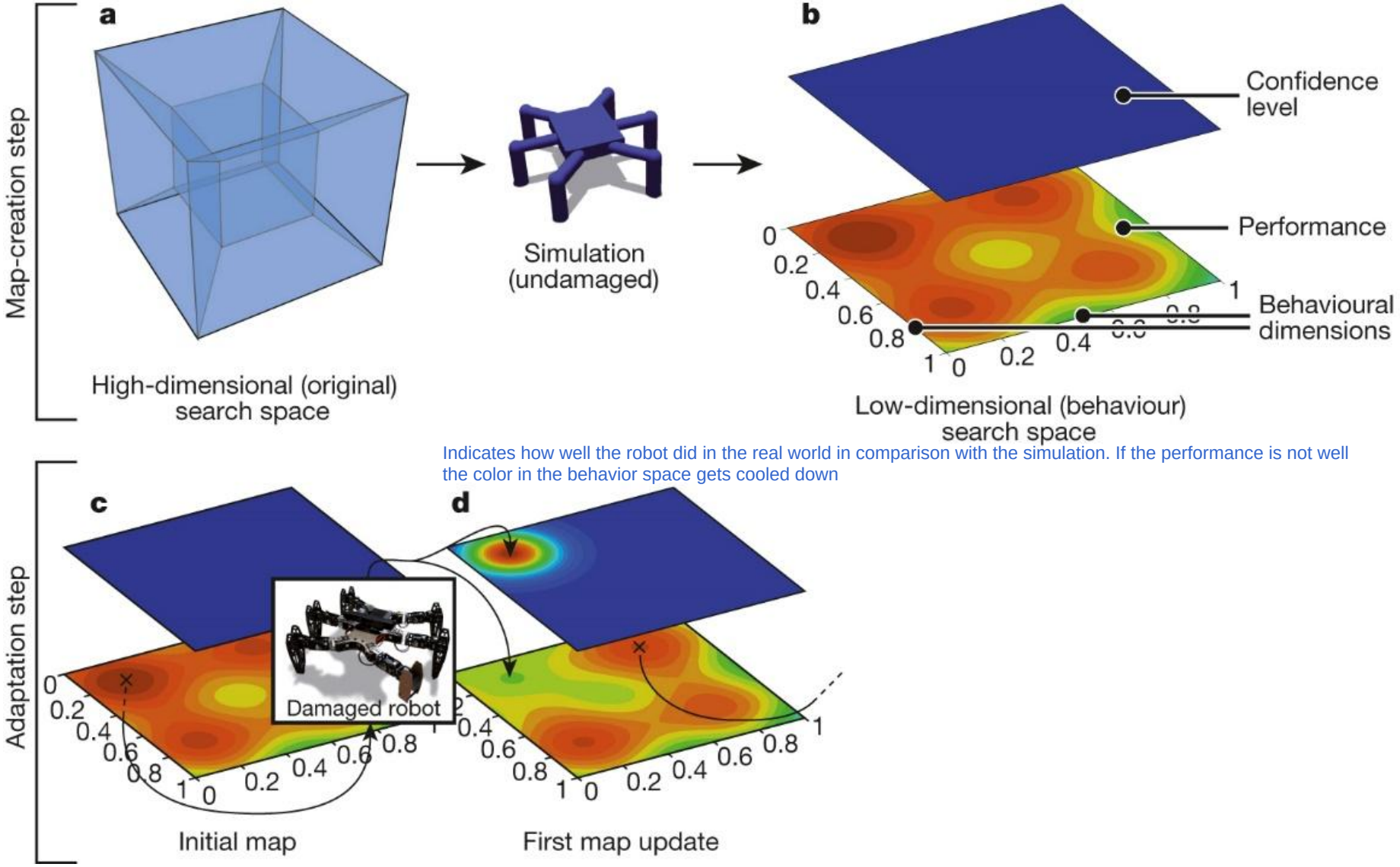

Indicates how well the robot did in the real world in comparison with the simulation. If the performance is not well the color in the behavior space gets cooled down

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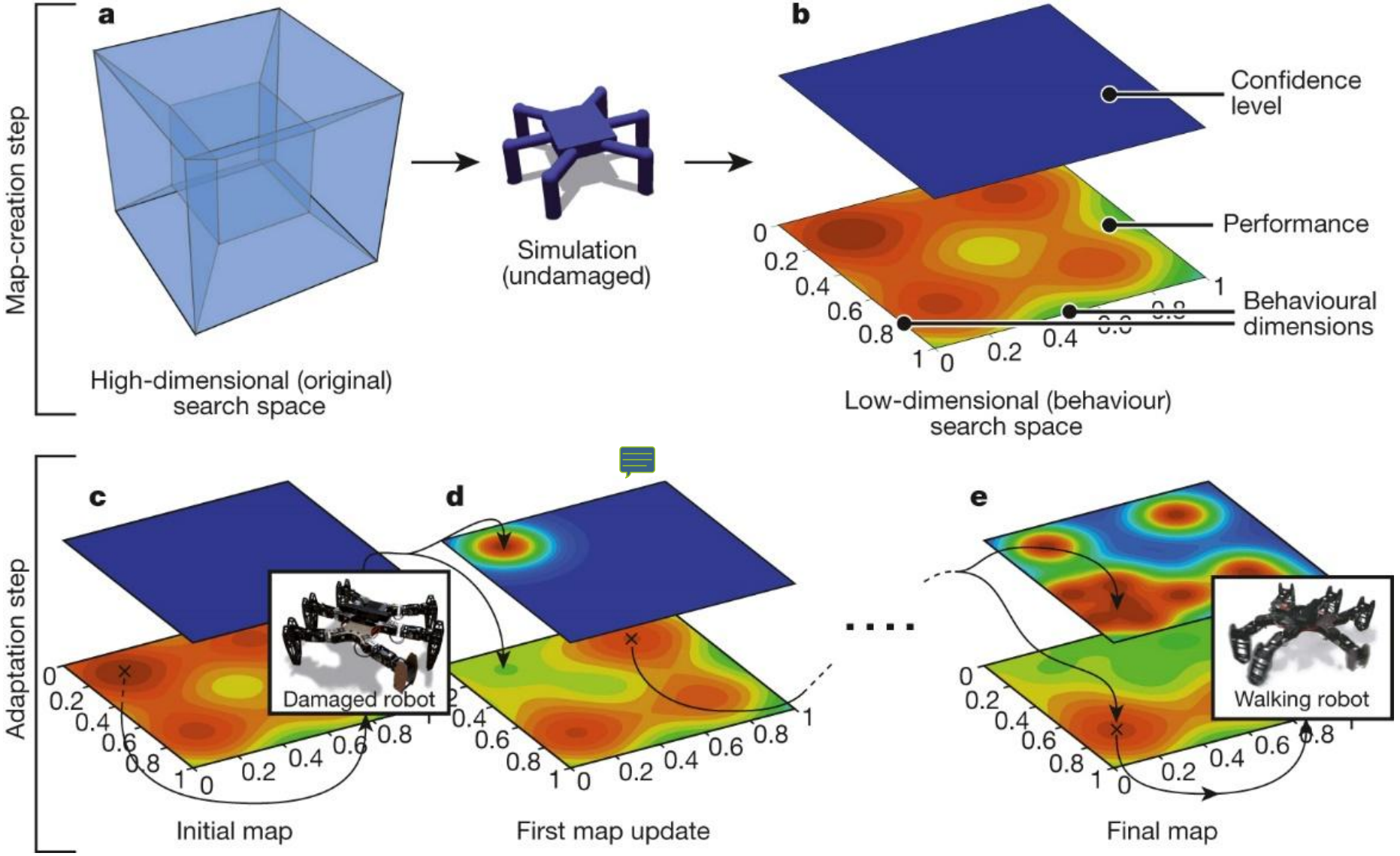

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Main experiments and results.

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Stars represent the performance of the very first try, choosing the best controller from the simulation and apply it to the real scenario.
Default behaviorar descriptor is the time the legs touch the ground.

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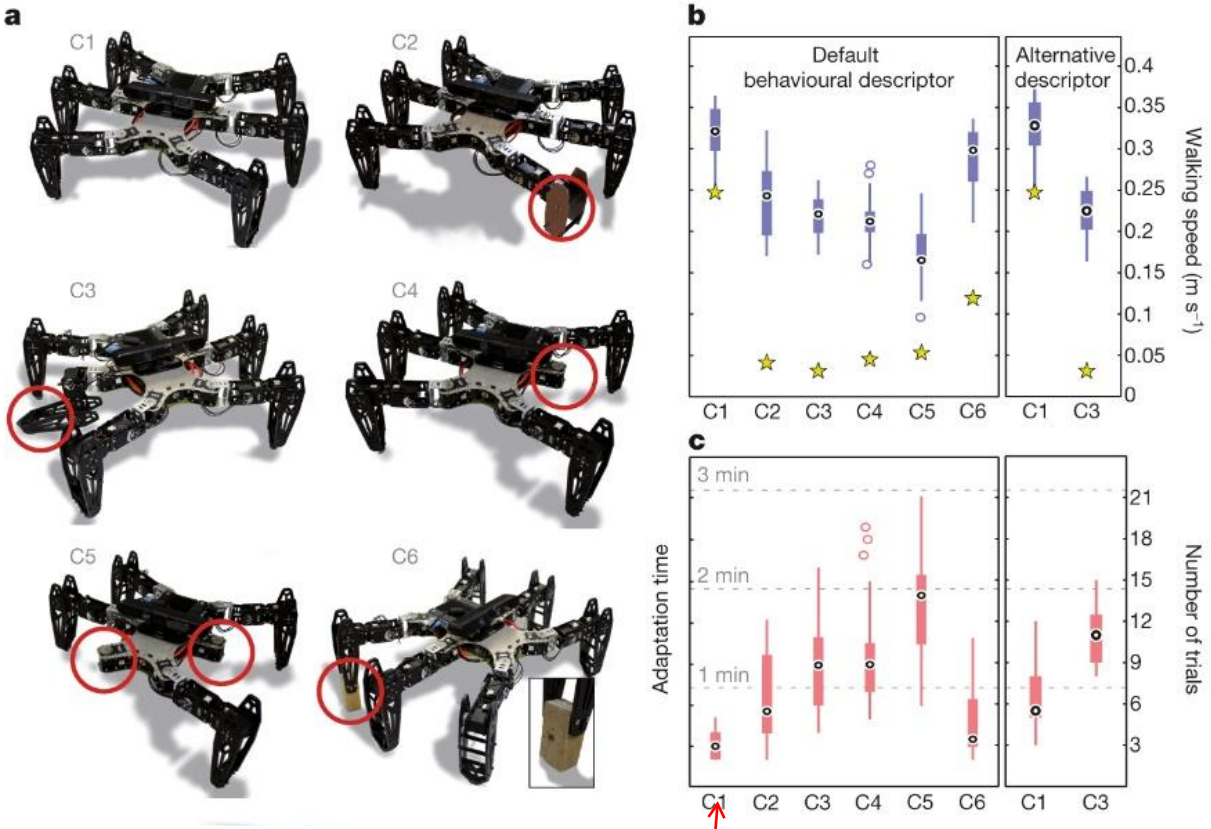

Displays how much time it took to recover from the changes

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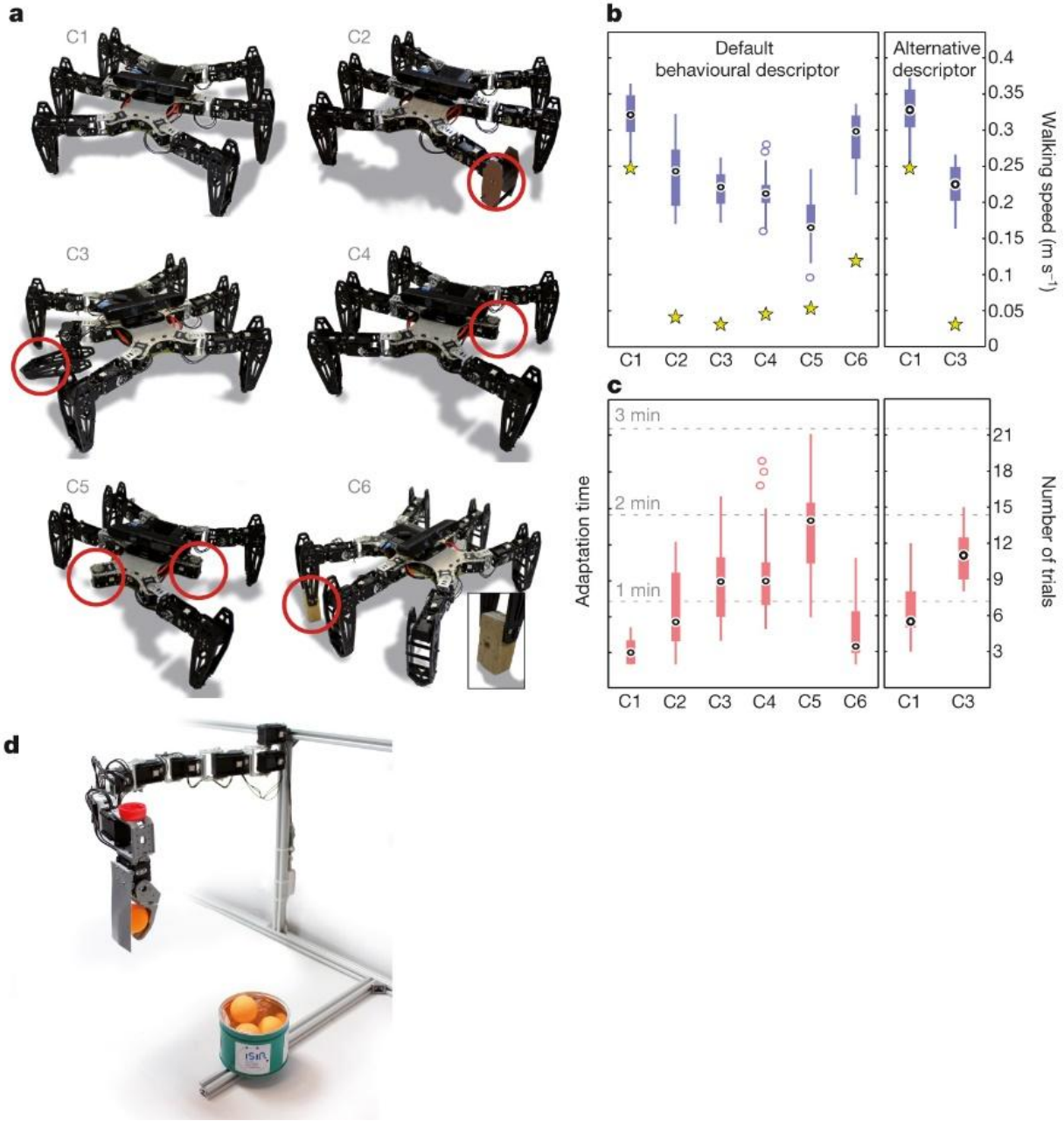

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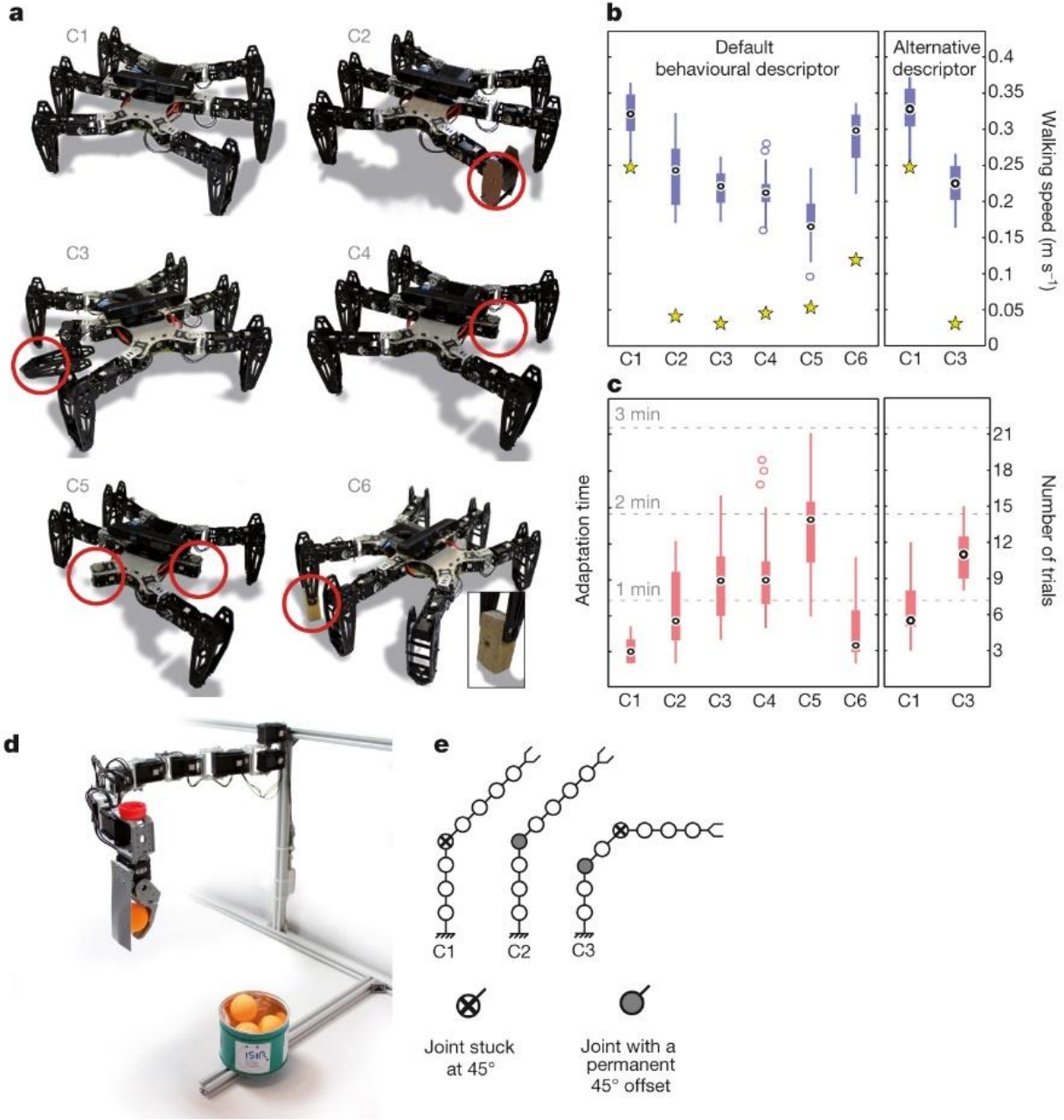

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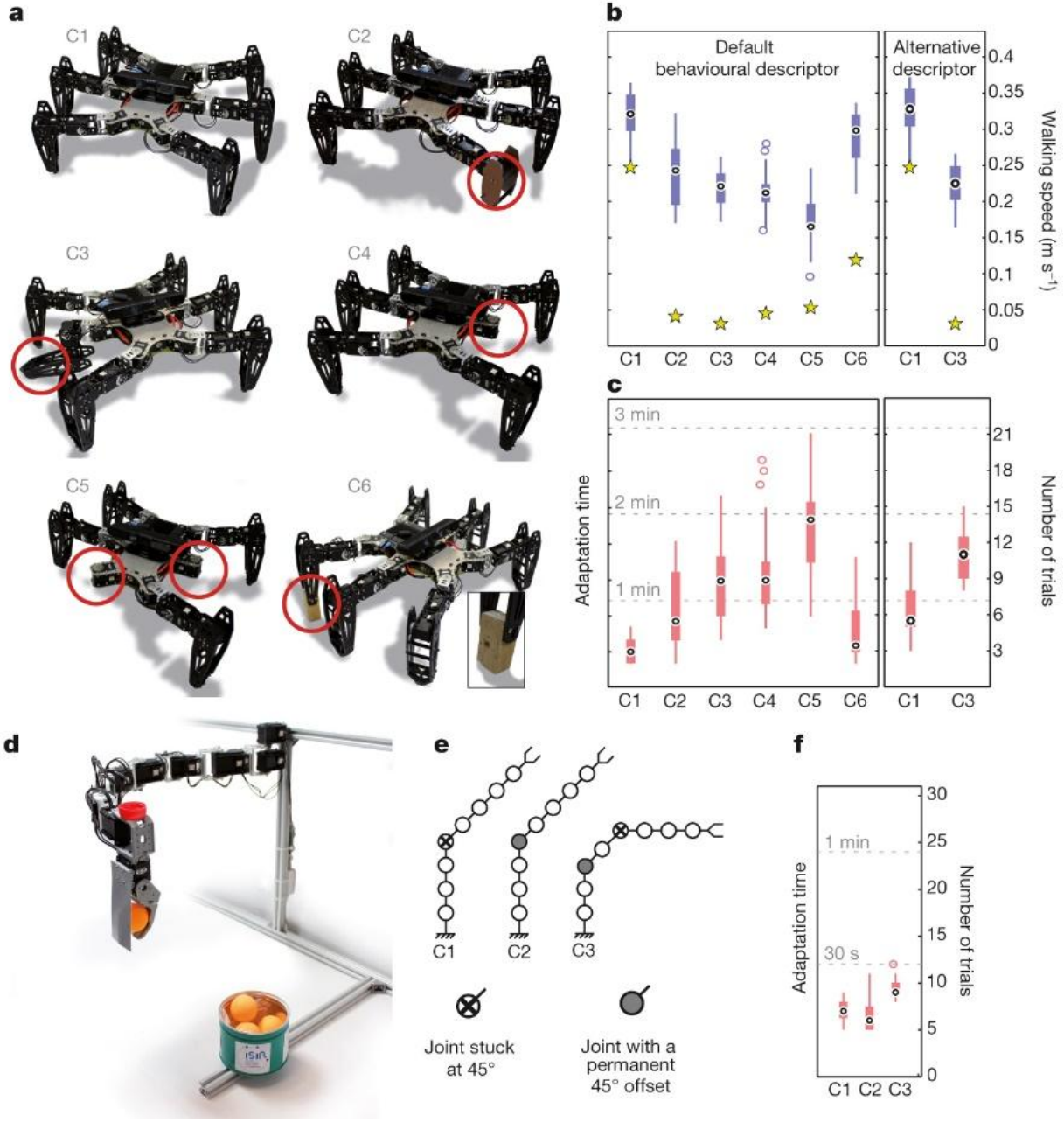

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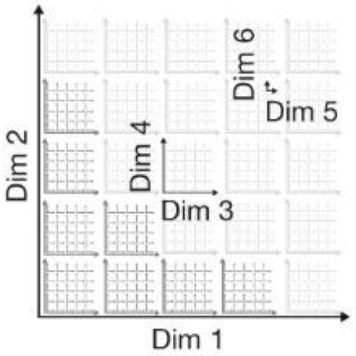
An example behaviour–performance ma



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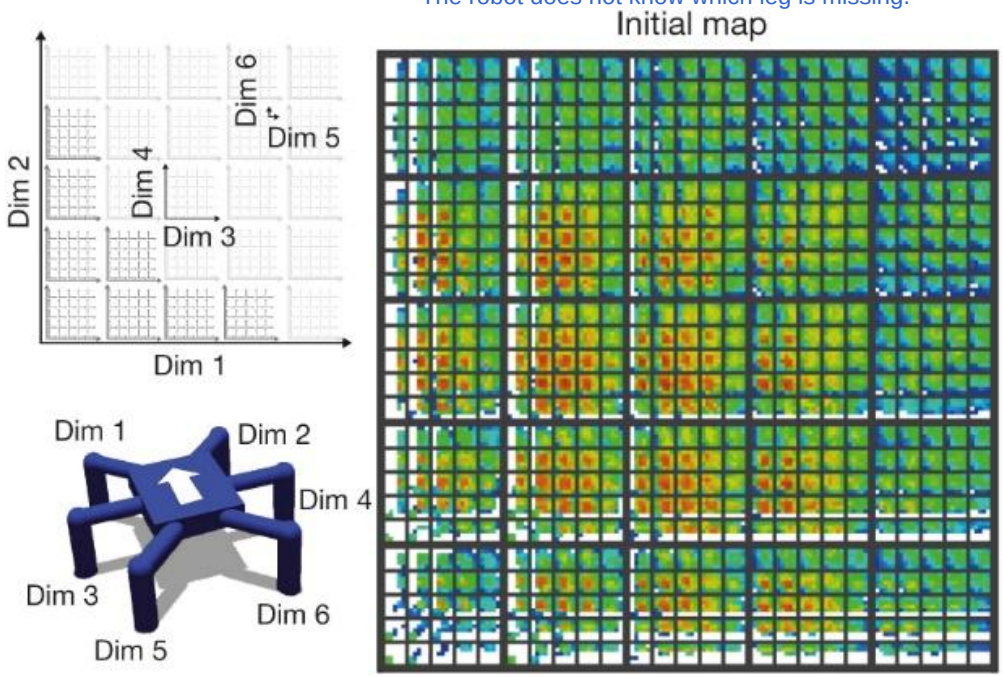
An example behaviour–performance map.

MAP-Elites has the property of keeping around lots of solutions that has very different behaviors.

It is tricky to find the location of the controller that provides a solution to the problem that the robot is facing.

The robot does not know which leg is missing.



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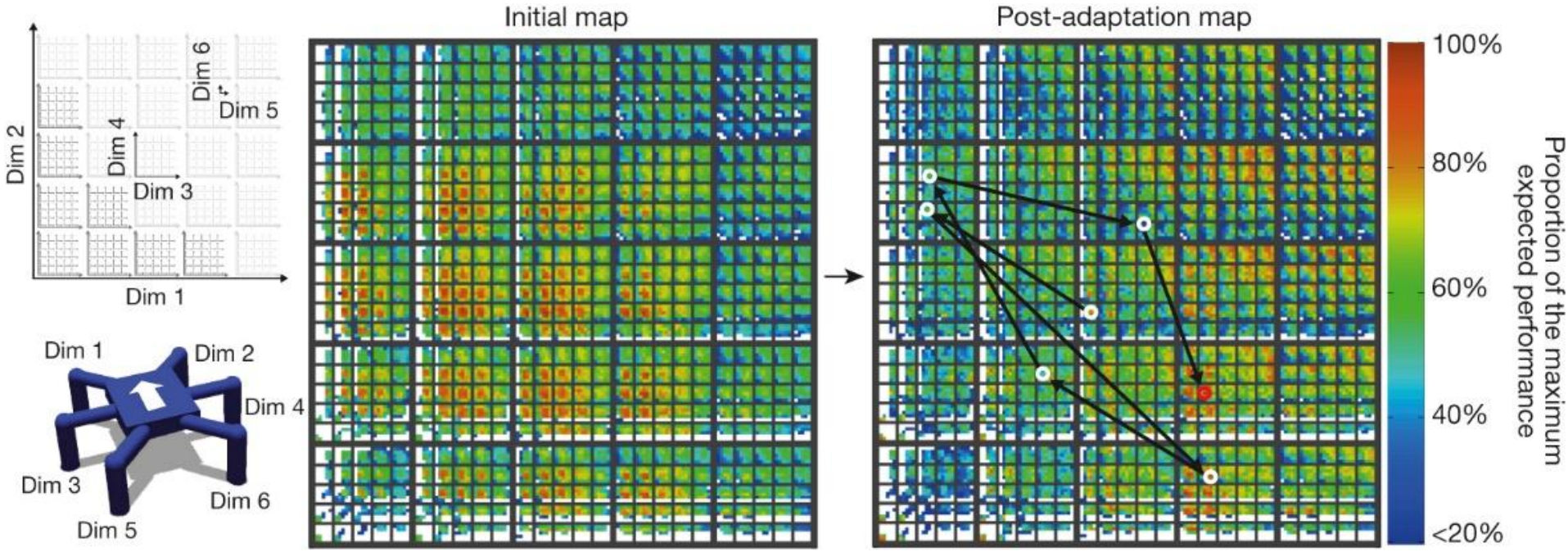

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