
Preface

Commander Data, The Borg, Nanites, Daleks, Cybermen, K9, Gort, Hal, Holly, Kryten, Huey, Duey, Luey, Marvin the Paranoid Android, Metal Mickey, R2D2, C3PO, Robocop, Robbie the Robot, Terminator, Tweaky. . . .

Robots. The movies are full of them. But in real life, they are scarce to the point of virtual nonexistence. At your local shopping center you are unlikely to be able to buy a decent sandwich-making robot regardless of the amount of money you are prepared to spend. And the same goes for robotic chauffeurs, robotic bed-makers, robotic gardeners, robotic chefs, robotic launderers, robotic counselors, and robotic teachers. We love the *idea* of robots. We would surely buy useful domestic robots in droves if we had the chance. But they are simply *not there*. They are not for sale. They do not exist.

Why is this? Why, at the end of the hi-tech twentieth century, after the investment of space-program-sized wads of cash, are there no useful domestic robots on the market? The truth of the matter is that, at present, no one has a really good answer. But despite the lack of “product,” there is no shortage of energy or inventiveness. Rather, the reverse. The mismatch between the fabulous level of investment and the paltry level of return has created a tension among robot workers—a desire to break the mold and branch out in a new directions. The net effect is an adventure culture, an ongoing explosion of variety, upheaval, and reformulation. Sandwich-making robots may be noticeable by their absence, but the outpouring of imaginative robotics-related work is wondrous to behold.

In keeping with the technicolour spirit of the times, this book offers a modestly adventurous view of an issue that is at the core of robotics

work: learning. It argues that the process we think of as learning divides into two utterly different processes, one of which is both more challenging (from the engineering point of view) and more cognitively fertile than its counterpart. It goes on to argue that this more sophisticated form of learning involves representation construction and establishes the preconditions for creative activity. More contentiously, the book proposes that creativity may be viewed as a kind of overstimulated learning process.

The adventurous argument has an adventurous methodology to go with it. At heart, the book is a research monograph because it sets out an original thesis with associated arguments and data. But it tries to steer away from the mind-numbing path typically trodden by such works by importing various devices from the pop-science genre. Key background material relating to contemporary learning models is presented in an easy-to-digest form with extensive use of mental imagery and a bare minimum of mathematics. Light relief is injected on a regular basis through a concoction of dialogues, anecdotes, and other forms of non-scientific material. The ultimate aim of the book might be described—to borrow a computer software term—as “edutainment.”

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