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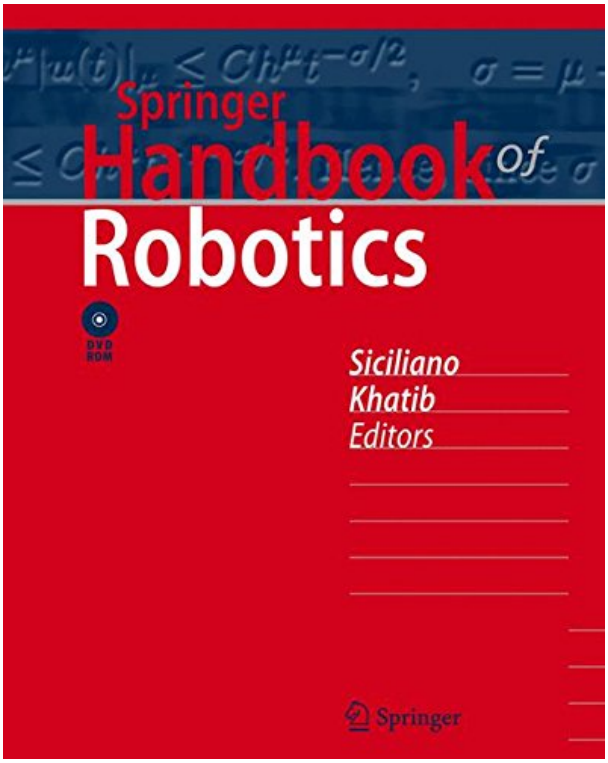

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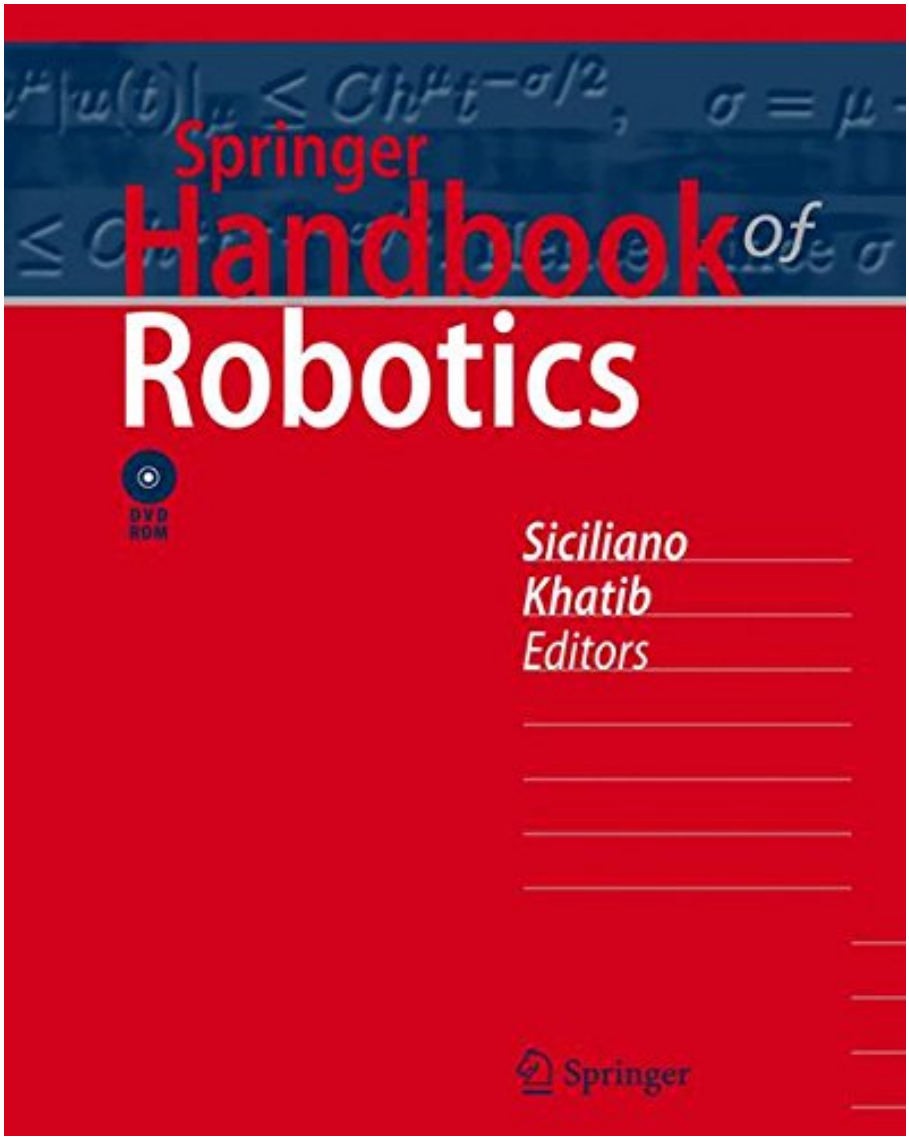

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- Robot structures
- Sensing and perception
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With the science of robotics undergoing a major transformation just now, Springer’s new, authoritative handbook on the subject couldn’t have come at a better time. Having broken free from its origins in industry, robotics has been rapidly expanding into the challenging terrain of unstructured environments. Unlike other handbooks that focus on industrial applications, the Springer Handbook of Robotics incorporates these new developments. Just like all Springer Handbooks, it is utterly comprehensive, edited by internationally renowned experts, and replete with contributions from leading researchers from around the world. The handbook is an ideal resource for robotics experts but also for people new to this expanding field.

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- Used Book in Good Condition

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massive and comprehensive
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There is considerable maths in the modelling of robots. Often to understand and control an arm. The multiple degrees of freedom of joints are wonderful for dexterity. But these often give an excursion into advanced linear algebra and control systems theory. Several chapters go into the necessary maths. You probably need at least 2 years of undergraduate engineering maths as preparation.

The myriad applications in which robots have been deployed is amply surveyed in Part F, Field and Service Robotics. In the household, there is of course the floor cleaning Roomba. A cute little gizmo, but it is not a toy; a genuine robot in its own right. The chapter mentioning it also describes an entire genre of competitors; mostly lesser known to the public.

Another chapter on agriculture and forestry talks about using robots for tasks like harvesting. Usually more successful when the terrain is flat and well defined; ie. having only one crop present. While the general case of a robot in hilly, wooded terrain with multiple obstacles and different species of trees is much harder to program.

I also ran into something in this chapter from my past, and it impressed me as to the book's comprehensiveness. At the University of Western Australia, there was a long running program to devise a robot sheep shearer. It started in the 70s and I met several of its researchers. I lost track of it after 1983, but I'd wondered whatever became of it. The book takes up the thread, explaining that the program took on the name Shear Magic, and was ultimately discontinued because it was never fast enough. But even in failure, this robotic application had a side effect. The demonstration of the technology was used by farmers to browbeat human shearers into moderating their wage claims, by playing off longstanding fears of workers about being replaced by machines. Of course, whether or not this was desirable may be a function of your political leanings.

To me, the most interesting section of the entire book concerned mirror neurons. This was a fundamental recent discovery in biology. The relevance to robotics is still perhaps speculative. Several robotics researchers have attempted to use it as inspiration for teaching a robot via its visual input and processing system. This contrasts greatly with the traditional teaching use of rule based formal logic, often involving the predicate calculus. The results described in the text are early but promising.

One slight curiosity is the relative deprecating of military applications. These are numerous and scattered throughout various chapters. Covering uses like landmine detectors, or the aerial Predator and its relatives that have seen much recent use in Iraq and Afghanistan for surveillance and attack. But at the top level of the Contents, there is no section on the military. And if you go to the Index, "military" is absent, while, for example, "mind reading" gets 2 entries. The downplaying of the military is especially puzzling given the historically prominent role of the US military in funding advanced robotics research.

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A must have
By Eleanor Takahashi iNSKIP
Anyone interested in Robotics should have this one one on their shelf. This is the future. The handbook to have,
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