

Proceedings

1993 IEEE/Tsukuba International Workshop on Advanced Robotics

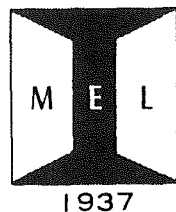
— Can robots contribute to preventing environmental deterioration? —

November 8-9, 1993
AIST Tsukuba Research Center
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TD170-2
IF113
1993

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IEEE Catalog Number: 93TH0589-2

ISBN: 0-7803-1441-7 Softbound Edition
0-7803-1442-5 Microfiche Edition

Library of Congress: 93-80011

Preface

Welcome to the 1993 IEEE/Tsukuba International Workshop on Advanced Robotics. The workshop is subtitled "Can robots contribute to preventing environmental deterioration?" The word 'environment' has been used by robotics researchers for many years. It usually means a *model space* in which robots are supposed to work. In this workshop the word 'environment' has a different meaning. It no longer means a model space but the *real space* in which we are bound to live: the earth.

We are now seriously aware that the resources of the earth are limited and we have to use them sparingly. We have to reduce pollutions by promoting recycling and by reducing refuse and waste. We have to maintain natural environments such as forests and seashores. We hope robots can help us to achieve this just like they do in manufacturing products.

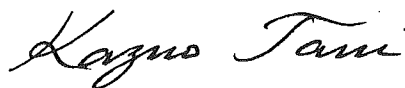
If we, the robotics researchers, want robots to be more useful, why don't we try to use robots to solve some of the environmental problems? This is the motivation of this workshop. Perhaps this is the first meeting in the world about robotics for *the* environment. We will call this 'environmental robotics.'

Robots are romantic machines and robot researchers are romantic people. Some of them may not like environmental robotics because environmental problems are not romantic, but the others may like it because the solution of environmental problems is romantic for it helps to create an utopia.

In order to create environmental robots, we have to clear two steps. The first step is to make robots to perform certain necessary tasks. If they cannot perform these tasks, there will be no such robots. The other step is to justify the existence of such robots. They must save more than they consume. Should they be justified in terms of costs? Maybe, but costs depend on policies. Should they be justified in terms of natural resources? Absolutely. We will be better off without environmental robots if they consume more resources than they save. This is a severe demand for the robotics researchers.

We do not have to be serious all the time talking about this problem. We can just enjoy the presentations, discussions, and our friendships in this workshop.

Finally, I would like to thank all the participants of the workshop for coming all the way to Tsukuba from around the world. I am also grateful to all the workshop executives for their efforts to organize the workshop. Special thanks are due to the Foundation for Promotion of Advanced Automation Technology and the Electro-Mechanic Technology Advancing Foundation for their financial supports.



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This workshop is supported by:

Foundation for Promotion of Advanced Automation Technology (PAAT)
Electro-Mechanic Technology Advancing Foundation

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