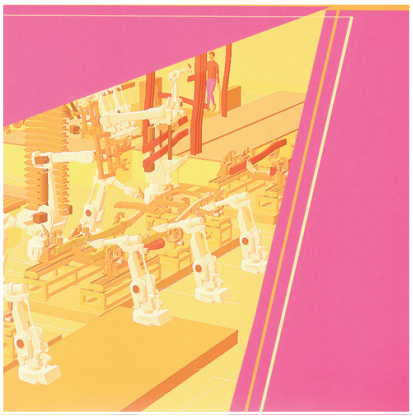

INTERNATIONAL JOURNAL OF
Automation Technology

AIMS & SCOPE

This journal focuses on advanced automation technologies ranging from basic techniques to a variety of applications meeting industrial requirements. This covers automation technologies on design, manufacturing, assembly, inspection, transportation, logistics, machine tools, robotic system, and control systems and devices. While some journals focus on automation specific to scientific research, no single journal provides such comprehensive coverage as engineering research and development papers and commercial magazines. This journal thus provides many practical examples relating advanced automation and reviews, research and development papers, news, and interview, providing readers with much new, interesting, and informative topics directly applicable to their work.

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Message from Editor-in-Chief

Yoshimi Takeuchi
Professor, Department of Mechanical Engineering, Graduate School of Engineering, Osaka University
2-1 Yamadaoka, Suita, Osaka
560-0871, Japan
Tel/Fax: +81-6-6879-7339
E-mail: takeuchi@mech.eng.osaka-u.ac.jp

On behalf of the editorial committee of International Journal of Automation Technology, I would like to sincerely ask all of you a favour of me to activate this journal since I am convinced that the automation technology is indispensable to the convenience and prosperity of human being.

The automation technology began with the development and introduction of numerical control (NC) machine tools in the latter of 1950s. In 1960s, the technology was applied to assemble electric goods and automobiles together with the development of a wide variety of automation-related methods such as industrial robots, semiconductor technologies and so on. In 1970s, this tendency had greatly affected the automation of production systems, which was called FA (Factory Automation or Flexible Manufacturing System), that is, flexible systems to rapidly cope with the change in the sort and quantity of products. The construction of FA is still continuing even now.

The current state of art in production automation is the evolution by making the most of IT (Information Technology), where there are infinite tasks to be solved, for example, the cooperation with design, manufacturing and sales, life cycle control of products from production to waste by IC tag, product liability management, lean production taking account of environment protection and energy saving, product development with individuality and characteristic, production sustaining human skill, manufacture of high value-added products, development of future products, etc.

After the bubble disruption in 1990, Japan has been suffering from the economical recession for 15 years, thus resulting in hanging low of automation technology development as well as decreased equipment investment. In addition, our serious problem in Japan is the disappearance of valuable technologies and manufacturing spirit by the mass retirement of engineers who have born the automation technology and supported excellent product manufacture. Thus, it is an important issue to improve and develop the automation technologies further.

From the above mentioned viewpoint, the journal focuses on the advanced automation technologies ranging from fundamental technologies to a variety of industrial applications, which meet the requirements, especially from industries. The journal covers all sorts of automation technologies regarding design, manufacturing, assembly, inspection, transportation, logistics, machine tools, robotic system, control system and instruments, and so on. There are some journals with respect to the automation specific to scientific and fundamental research, however, no journal exists, which aims at providing engineering researches and practical developments.

Thus, the journal takes up a large amount of practical examples relating advanced automation technologies as review papers, research and development papers, news and interview so that the readers can take interest in the journal. The editorial committee wants IJAT to serve engineers and managers for the requirement of automation technology developments, and is all concerned for your contribution to IJAT.

Congratulatory Message

Publishing in International Journal of Automation Technology

Yusuf Altintas
Professor, NSERC – P&WC Industrial Research Chair
Fellow of CIRP, ASME and SME
Manufacturing Automation Laboratory
The University of British Columbia
Department of Mechanical Engineering
2054-6250 Applied Science Lane
Vancouver, B.C. V6T 1Z4
Canada

Automation technology is created by integrating mechanical design, dynamics, control, sensors, actuators, electronics and real time software engineering knowledge into a single system. While there are a number of journals which focus on the individual subjects, a sole journal like IJAT which presents the integration of disciplines to create automation products has been missing.

Although automation covers rather a large spectrum, we encourage the authors to submit their articles with the details of technology integration. While mathematical details of a position control of a single axis machine may be more suitable to be presented in a pure control journal, the integration of mechanical drives, motors, sensors, control law, trajectory generation and real time software modules constitutes an excellent example for an automation technology. Similarly, while an image processing algorithm would be narrow, integration of image processing, timing, coordination with moving machinery, hardware and software lay out describes an automation technology.

The aim of the journal is to bring theory, design and integration together which leads to the creation of a novel automation technology. The journal is expected to be a key resource for automation engineers in industry and academia while disseminating archival academic knowledge to the society.

Yusuf Altintas

Congratulatory Message

In Celebration of the New "International Journal of Automation Technology"

Sojiro Tsuchiya
DENSO CORPORATION
Senior Managing Director,
Member of the Board
Production Promotion Center
Kariya, Aichi, Japan

I'm especially pleased to send you my congratulations on the publication of "International Journal of Automation Technology".

The automation technology has the extremely clear purpose of replacing human work with automated system. However, the automation technology requires various kinds of technologies, ranging from mechanical technology, electronics, control technology, software technology for computer, to system technology necessary for those to be functioned effectively.

Therefore, people, who start to learn the automation technology or keep up on it, cannot help gathering fragmentary information from many kinds of technology fields. Additionally, relationship and collaboration between academic institute and industries are important issues that mean industrial firms investigate mostly practical applications of automated machines and production systems, while mainly universities and institutes research fundamental and elemental technologies.

With these backgrounds, it has been tough to grasp its whole picture of the automation technology in general, although some of leading universities, institutes and industry firms themselves advance and accumulate the automation technology systematically.

This time, through publishing "International Journal of Automation Technology", I believe the automation technology must become popular and familiar for a great number of engineers, researchers and students. Especially, this publication is delightful news for young engineers, who work toward advanced automation in global business. I greatly expect this journal play a roll of network among engineers and researchers working on the automation in various technology fields, to help upskilling and stimulation for them, and to contribute the development of the automation technology itself as well.

Sojiro Tsuchiya

Congratulatory Message

In Celebration of the Foundation of "International Journal of Automation Technology"

Tamio Arai
Professor, Department of Precision Engineering, School of Engineering, The University of Tokyo
7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan

It is my great honor to extend my sincere congratulation on the new journal on automation technology in 21st century.

The assembly automation started in the 1960's after machining had been mechanized. It took a long period to mechanize workers' operation and automate assembly lines. In these decades, computers exploded their ability and robots gained intelligence. The diversification of the customer requirement, however, has changed automated lines into manufacturing systems with low flexibility. Instead of automation, cell manufacturing system by human workers turned dominant.

Hereafter, the automation will become important again. A new age of automation comes with intelligent use of sensors; technology of image processing an force feedback enables automatic machine not only adaptable to the change of environment but also cooperative with human workers. Applications of automation technology will extend from manufacturing industries to service sectors, where IRT (Information and Robot Technology) is required to support to deal with physical objects and to generate values for each individual.

I hope the journal advances automation technology in various novel fields such as bio-engineering, human support technology and service engineering.

Tamio Arai

International Journal of Automation Technology

Editorial Board

International Journal of Automation Technology
Instructions to Authors

1. Objective
This publication is an interdisciplinary journal covering the science and technology of automation.

2. Submission Qualifications
None.

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Authors alone are responsible for all statements in manuscripts.

4. Targeted Fields
All fields of automation. Submission of a paper implies that material in that paper has not been published before and is not being considered for publication elsewhere.

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5.1. *Papers* present new findings and original concepts accompanied by complete discussions. The number of pages includes the abstract, keywords, text, and illustrations (tables, figures, and photographs). They shall average 8 printed pages and have not been published to date elsewhere.
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6.1. The language for contributions may be English or Japanese.
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Toranomon Sangyo Bldg., 2-29,
Toranomon 1-Chome, Minatoku, Tokyo 105-0001, Japan
Tel: +81-3-3508-0051
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International Journal of Automation Technology

Guide for the Preparation of Manuscripts

1. Paper to be Used for Contributions

1.1. Use A4 size white paper for the manuscript and pasteboard for figures, tables and photographs.

2. Writing Tools

2.1. Use a wordprocessor/typewriter or a similar machine for preparing manuscripts and captions.

2.2. Diskette submission instructions
Storage medium: 3.5-inch diskette or CD in IBM MS-DOS, Windows format. MSWord or Tex format is preferable.

3. Liaison Person

Designate one person who is most suitable for liaison with the Editorial Committee.

4. Composition of Manuscripts

4.1. Manuscripts should consist of a title sheet, an abstract, keywords, the text, a reference list, figures, tables, and a caption list of individual illustrations.

4.2. Photographs are classified in the same category as figures in a serial numbering.

5. Contents of the Manuscript

5.1. Title sheet

5.1.1. State the type of manuscripts, title, the authors' names, and their present affiliations and addresses on this sheet.

5.1.2. Write a brief title which appropriately expresses the content. Words such as "observation on," "some" and "study" may be deleted by the editor.
Capitalize the first letters of all words in the title except for prepositions, articles and conjunctions.

5.1.3. Write authors' names in the order of first name and surname.

5.1.4. When the present affiliations are not the same of those at the time the work was done, write the former ones in parentheses.

5.2. Abstract

Describe contents of papers briefly and factually, not exceeding 200 words.

5.3. Text

5.3.1. Type manuscripts double-spaced with less than 25 lines on each page and less than 60 characters on each line. A printed page will be 4 pages of typed manuscripts.

5.3.2. Reserve a margin of more than 25mm on each side of the sheet.

5.3.3. Papers should not be of an advertising nature. Use generic names rather than trade names.

5.3.4. Use footnotes for a much detailed explanation as possible of any specific products, manufacturing method, equipment, etc, which are not generally known, and give the model numbers and the manufacturers' names and addresses.

5.3.5. Use the following classification, in principle, for section, subsection, heading and subheading.

Section:
1. 2. 3.
Subsection:
1.1. 1.2. 1.3.
Heading:
1.1.1. 1.1.2. 1.1.3.
Subheading:
(1)(2)(3)

5.3.6. Do not use abbreviations for uncommon technical terms.

5.3.7. Chemical names or chemical formulae can be used for expressing the names of elements, alloys and compounds.

5.3.8. Write mathematical expressions as: $\frac{a}{b}$, $\frac{(a+b)}{(c+d)}$ in principle, but write simpler ones on a single line as a/b, $(a+b)/(c+d)$.

5.3.9. Define all mathematical symbols, subscripts and superscripts clearly.

5.3.10. Use the Christian Era for year numbers.

5.4. References

5.4.1. Give serial numbers to references.

5.4.2. Write reference numbers in the text with a closing parenthesis.

5.4.3. Use the abbreviations of cited literature according to Chemical Abstracts.

5.4.4. Refer to the following model for references.

[1]T. Arai, T. Yano et al., "Development of a Direct-Drive Human-like Manipulator," J. of the Robotics Society of Japan, 5-1, pp. 27-35, 1985.
[2]Rumelhart, McClelland and the PDP Research Group, "Parallel Distributed Processing," The MIT Press, 1988.
[3]"Three Dimension Motor," Japanese Patent 1946377, 1985.
[4]T. Yamada and T. Morimatsu, "Remarks on RBF Controller Induced from Neural Network Controller," Proc. of the 34th SICE Annual Conference, pp. 725-726, 1996.

5.5. Tables, figures and photographs

5.5.1. Mount each table, figure and photograph on a pasteboard and number with Roman numerals.

5.5.2. Write the representative author's name in a blank space of a pasteboard.

5.5.3. State the position of tables and figures to be inserted in the text in the right hand margin.

5.5.4. The printed size of 11cm × 8cm is equivalent to 300 words.

5.5.5. Photographs must be in sharp contrast and have no damage such as dirt, scratches etc. as they will be used as they are.

5.5.6. A microphotograph should include a measurement reference rather than refer to amount of magnification.

5.5.7. Use a capital letter only for the first word of a caption.

5.5.8. Provide a succinct heading for each illustration which makes the information intelligible without reference to the text.

6. Biography

The form is shown in separate sheet.

(As of September 1, 2006)