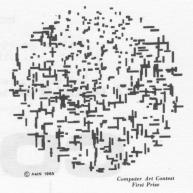
A reprint from:

computers and automation



(Reprinted with permission from "Computers and Automation", August, 1965, Volume 14, No. 8, © 1965, published by Berkeley Enterprises, Inc., 815 Washington St., Newtonville, Mass. 02160)

Computer Art Contest First Prize The winner of our Annual Computer Art Contest is A. Michael Noll, for his entry entitled "Computer Composition with Lines." For more details, see page 10.



computers and automation

AUGUST, 1965 Vol. 14, No. 8

editor and publisher
EDMUND C. BERKELEY

ASSISTANT EDITORS
MOSES M. BERLIN
LINDA LADD LOVETT
NEIL D. MACDONALD

CONTRIBUTING Editors

JOHN BENNETT

ANDREW D. BOOTH

DICK H. BRANDON

JOHN W. CARR, III

NED CHAPIN

ALSTON S. HOUSEHOLDER

PETER KUGEL

advisory committee
T. E. CHEATHAM, JR.
JAMES J. CRYAN
GEORGE E. FORSYTHE
RICHARD W. HAMMIDER
ALSTON S. HOUSEHOLDER
HERBERT F. MITCHELL, JR.
VICTOR PASCHKIS

associate publisher
PATRICK J. MCGOVERN
production manager

ANN B. BAKER art director RAY W. HASS

fulfilment manager
WILLIAM J. MCMILLAN, 815 Washington St.
Newtonville, Mass. 02160, 617-DEcatur 2-5453

Advertising representatives
New York 10018, BERNARD LANE
37 West 39 St., 212-BRyant 9-7281
Chicago 60611, COLE, MASON AND DEMING
737 N. Michigan Ave., 312-SU 7-6558
Los Angeles 90005, WENTWORTH F. GREEN
300 S. Kenmore Ave., 213-DUnkirk 7-8135
San Francisco 94105, A. S. BABCOCK
605 Market St., 415-YUkon 2-3954
Elsewhere, THE PUBLISHER
815 Washington St., 617-DEcatur 2-5453
Newtonville, Mass. 02180

computers and data processors: the design, applications, and implications of information processing systems.

In This Issue

Special Issue on the Problem of Computer Personnel

- 10 THE ANNUAL COMPUTER ART CONTEST OF "COMPUTERS AND AUTOMATION"
- 12 SOME PROGRAMMER-EMPLOYER PROBLEMS: A REPORT FROM THE FIELD by Ned Chapin

Some stands taken by employers who are hiring programmers may be needlessly expensive

PERSONNEL PROBLEMS IN DATA PROCESSING SYSTEMS: THE APPROACH OF TOP MANAGEMENT by Harvey W. Protzel

Many people working in data processing systems are misplaced, says the author: why? and what to do?

18 EMPLOYMENT, EDUCATION, AND THE INDUSTRIAL SYSTEM by Prof. John Kenneth Galbraith

The problem of the insufficiently educated: their unemployability in the industrial system. The remedy: a more rapid accommodation of education to industrial need.

22 IS COMPUTING A PROFESSION? by Dr. Robert P. Rich

What being in a profession implies, and how persons who engage in computing and programming may eventually become professionals — if they really want to

In Every Issue

across the editor's desk
COMPUTING AND DATA PROCESSING NEWSLETTER

editorial

31

7 The Progress in Programming Computers: Some Questions of Semantics

9 What's That Price Again, Sir?

throughput

28 The Personnel Development Problem — August 1965

30 capital report

reference information

15 Calendar of Coming Events

4.6 Computer Census

48 New Patents, by Raymond R. Skolnick

index of notices

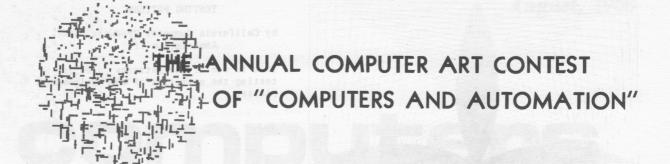
50 Advertising Index

50 Classified Advertisements



COMPUTERS AND AUTOMATION IS PUBLISHED MONTHLY AT 815 WASHINGTON ST., NEWTONVILLE, MASS. 02160, BY BERKELEY ENTERPRISES, INC., ADDITIONAL OFFICE OF PUBLICATION: 1657 WASHINGTON ST., HOLLISTON, MASS. PRINTED IN U.S.A. SUBSCRIPTION RATES: UNITED STATES, \$15.00 FOR 1 YEAR, \$29.00 FOR 2 YEARS, INCLUDING THE JUNE DIRECTORY ISSUE; CANADA, ADD 50c A YEAR FOR POSTAGE; FOREIGN, ADD \$3.50 A YEAR FOR POSTAGE; FOREIGN, ADD \$3.50 A YEAR FOR POSTAGE. ADDRESS ALL EDITORIAL AND SUBSCRIPTION MAIL TO BERKELEY ENTERPRISES, INC., 815 WASHINGTON ST., NEWTONVILLE, MASS., 02160. SECOND CLASS POSTAGE PAID AT HOLLISTON, MASS.

POSTMASTER: PLEASE SEND ALL FORMS 3579 TO BERKELEY ENTERPRISES, INC., 815 WASHINGTON ST., NEWTONVILLE, MASS. 02160. © COPYRIGHT, 1965, BY BERKELEY ENTERPRISES, INC., CHANGE OF ADDRESS: IF YOUR ADDRESS CHANGES, PLEASE SEND US BOTH YOUR NEW ADDRESS AND YOUR OLD ADDRESS (AS IT APPEARS ON THE MAGAZINE ADDRESS IMPRINT), AND ALLOW THREE WEEKS FOR THE MAGE TO BE MADE.



The front cover of our August issue is awarded to an entry by A. Michael Noll, Research Engineer, of Newark, N. J., entitled "Computer Composition with Lines". He says:

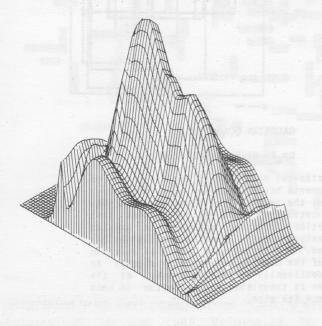
The positions of the vertical and horizontal bars have been chosen at random with the constraint that the positions must fall inside a circle. The length and width of the bars was chosen at random within a specified range. If the position of the bar fell within a parabolic region in the upper half of the circle, the length of the bar was shortened by a factor proportional to the distance of the position from the edge of the parabolic region. The motivation for this type of pattern came from Piet Mondrian's "Composition with Lines", 1917, now in the possession of the Rijkmuseum Kröller-Müller, Otterlo, The Netherlands.

Four other computer art drawings are also included in our August issue with honorable mention. Each is explained with some notes next to the picture of the drawing.

Next year we expect to run this contest again, and we invite contributions of computer art from interested readers.

NEUTRON FLUX DISTRIBUTION

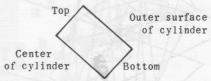
by D. J. DiLeonardo, Westinghouse Electric Corp., Bettis Atomic Power Laboratory, West Mifflin, Pa. 15122



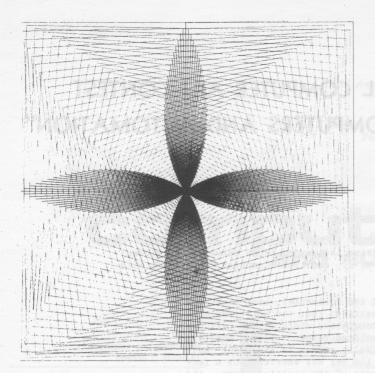
When studying the physics behavior of a nuclear reactor, the neutron diffusion equation in two dimensions is solved by finite difference techniques to determine the neutron flux (the product of the neutron density and velocity) and power density at various locations in the reactor core. Typical problems may consist of a mesh containing 5000 points.

To help interpret and digest the mass of data generated by the physics calculations, a FORTRAN program has been written to draw isometric plots of the data using a Calcomp Plotter.

Here is a plot obtained from a sample twodimensional diffusion equation calculation. It shows the distribution of the neutron flux below 1 electron-volt in a vertical r-z slice through a fuel module assembly of cylindrical geometry. The orientation of the plot is shown in the figure below:



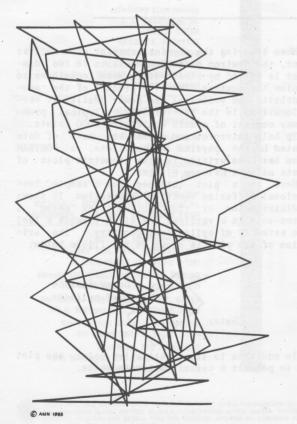
In addition to its quantitative value the plot seems to possess a certain artistic value.



VERTICAL-HORIZONTAL NO. 3

by A. Michael Noll

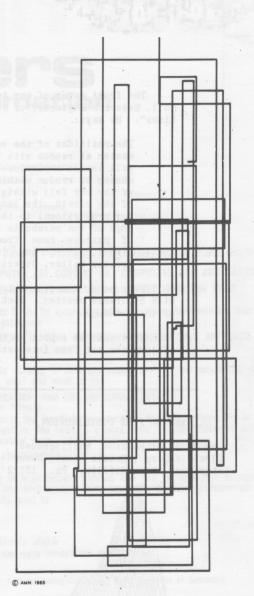
101 randomly selected points (with x-coordinate less than the y-coordinate) were connected by vertical and horizontal line segments to form a single line. The lines were determined under the condition that only one of the two coordinates was changed (alternatingly) from one point to the next.



TESTING PATTERN

by California Computer Products, Inc. Anaheim, Calif.

This is one of the patterns used for testing the operation of the Calcomp Plotter.



GAUSSIAN QUADRATIC

by A. Michael Noll

The horizontal positions of the end points of the line segments have a Gaussian or normal curve distribution; the vertical positions increase quadratically, until they reach the top, except that when any vertical position measured is greater than the constant height, then the constant height is subtracted. The result is a line that starts at the bottom of the drawing and randomly zigzags to the top in continually increasing steps; at the top, the line is translated to the bottom to once again continue its rise.