

Correspondence

To the Editor
The Computer Journal

Note on 'An algorithm for minimax approximation in the nonlinear case'

Sir,
I have read the recent paper of Messrs. Osborne and Watson (this *Journal*, Vol. 12, p. 63) with great interest. I was much impressed by the thorough convergence-analysis of the described algorithm; it must, however, be pointed out that the algorithm itself is not novel. A slightly different version of it, called 'approximation programming', has been known since 1961 (Griffith *et al.*, 1961) and is widely referred to. The variant described by Messrs. Osborne and Watson has also been discovered and its convergence proven (Ishizaki *et al.*, 1965); its relative merits are compared with those of other techniques, e.g. in Temes and Calahan (1967).

Yours faithfully,
G. C. TEMES

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9 May 1969

References

- ABADIE, J. (editor) (1967). *Nonlinear Programming*, North-Holland Publishing Co., p. 189.
GRIFFITH, R. E. *et al.* (1961). A Nonlinear Programming Technique for the Optimization of Continuous Processing Systems, *Management Science*, Vol. 7, p. 379.
ISHIZAKI, Y. *et al.* (1965). Some Considerations on Min-Max Approximation Problems for Network Design, Proc. Allerton Conf. on Circuit and System Theory, p. 786.
KLERER, M., and KORN, G. A. (editors) (1967). *Digital Computer User's Handbook*, McGraw-Hill Book Co., pp. 4-129.
TEMES, G. C., and CALAHAN, D. A. (1967). Computer-Aided Network Optimization: the State-of-the-Art, *Proc. IEEE*, Vol. 55, p. 1832.

To the Editor
The Computer Journal

OCR—benefits and pitfalls

Sir,
Further to the above paper by Mr. Paine of Eastern Electricity in your May issue, while I sympathise with the difficulties he has experienced, I think he gives an unduly pessimistic view of the current state of the art on document handling and reading machines, which may mislead your readers.

They may like to compare the figures he gives for document throughput with the corresponding figures being achieved in the field by our machines.

For example, we have three 3-pocket sorters operating at Chesterfield on British Postal Orders (CMC-7, MICR reading) and the GPO have often run more than 400,000 documents in a single shift on one machine. That is an actual throughput of 50,000 per hour or 830 per minute. About 700 per minute would be typical, by comparison with the 20 to 45 per minute which Mr. Paine struggled to achieve, and his ultimate figure of 150 per minute. Furthermore, these machines were installed and working in 66/67 some nine

months prior to the Farrington machine mentioned by Mr. Paine, and they have kept going at the same pace ever since. Also, relative to the EEB documents, postal orders are in much worse condition; they are thin, dogeared, and carry postage stamps in addition to the usual staples, paper clips, pins, and sellotape.

On heavy duty cheque paper in good condition we get 1,200 documents per minute, 72,000 per hour.

The GPO system uses MICR, but we have since fitted mark sensing, OCR-A, OCR-B, serial numbering and microfilming options to our transports. (Selling prices are very much less than those quoted by Mr. Paine.)

We have systems for working on-line to computers and data links, or off-line to paper tape or compatible mag-tape, with over 150 transports installed.

Finally, therefore, I must dispute Mr. Paine's conclusion that we need to develop faster and more tolerant transport systems. We have them already and they are fully proven. There is no need to look hopefully across the Atlantic for a solution. London is far enough!

Yours faithfully,
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19 May 1969

Mr. Paine replies

I was asked to write an article on business applications, discussing problems and how they were overcome, in contrast to the normal glossy business article in other magazines, in which everything in the garden is pictured as rosy and painless. It was hoped that this would be of more benefit to serious business users, than a general assertion that OCR could be used.

I gave the detailed story of a particular installation, including the wide benefits we have received from using OCR and I do not think that those experienced computer users that read the *Journal* would be misled into thinking this was a 'pessimistic view of the current state of the art'. I hope that my article made the point that one was not just installing a machine, but a system that had to be carefully designed to fit in with the needs of the company.

I am pleased to know of the current success of the Crosfield Readers, and of course, I investigated their capability at the time that Eastern Electricity surveyed the field in 1965/66. I do not think that the Postal Order application is strictly comparable—I would think that it is much easier to read documents of the same size, printed by the stationery supplier in magnetic ink, using the stroke characters of CMC-7, than to read optically, computer printed documents, which are cut at time of payment so that they were not of constant size. I was impressed by the transport used for the Post Office job, but one of the main points of my article was that potential users should look for a very good transport and not just concentrate on the reading electronics.

I am glad to hear that Crosfield's have added various options to their machine, but at the time we had to take a decision, they did not have an optical character reader with matrix mark sensing, reading on the fly, so that re-scan of doubtful characters was possible, with output on to magnetic tape, and with batch header facilities.