United States Postal Service

5TH ADVANCED TECHNOLOGY CONFERENCE

November 30-December 2, 1992

The Postal Service in the Information Age

Session Outline

Conference co-chairpersons:

Richard D. Weirich
Vice President
Information Systems

William J. Dowling
Vice President
Engineering, Research, and Development

KEYNOTE SPEAKERS:

Shoshana Zuboff  Professor of Organizational Behavior and Human Resource Management --- Harvard University

Robert Lucky  Executive Director, Communications Sciences Research Division --- AT&T Bell Labs

Raj Reddy  University Professor and Dean of School of Computer Science --- Carnegie Mellon University

Lotfi A. Zadeh  Professor, Electrical Engineering and Computer Science --- University of California-Berkeley

PROGRAM COMMITTEE

Timothy B. Barnum    Charles R. Chamberlain
Bernard J. Bennington    Harvey M. Donaldson
J. Gerard Bohan    Charles Lueck
Paul M. Brenner    Ray H. Morgan
Monday

Opening Session
8:00 - 9:30

Guest Speakers: William J. Dowling
Robert Lucky

Break

10:00-11:30 Session M1A
Monday, November 30
Topic: Material Handling
Session Chairman: Gary Flann

- Incorporating point-of-call sequencing in mail processing system—Y. Yeung (Canada Post Corporation) ..................3
- Back to basics on flats feeding—Kenneth Guenther (Bell & Howell Company) .................................19
- Automatic feed unit for parcel sorting machines—Jean-Claude Burbaud (French Post Office Technical Research Centre) .................................................33
- A damage resistant bar code for the royal mail—Richard E. Blahut (IBM) .........................................49
- Improving material handling system performance through belt selection—Bill Hornsby (Habasit Belting, Inc.) ....55

11:30 Questions and Discussion

10:00-11:30 Session M1B
Monday, November 30
Topic: Operations Research
Session Chairman: Marjorie Stein

- Technology and the 21st Century Government Organization—Bruce E. Tonn (Oak Ridge National Laboratory) ............75
- Isolating Errors in State-Space Models of Complex Systems—John L. Maryak (The Johns Hopkins University) .............93
- Control of complex Dynamic Systems by Neural Networks—John A. Cristion (The Johns Hopkins University) ..........109
- A Fuzzy Dynamic Programming Algorithm for Distribution Network Analysis—Teresa C. Rubinson (Pitney Bowes) ......125
A Hierarchical Approach to Equipment Selection and Scheduling at a GMF -- Jonathan F. Bard (The University of Texas) .................................................. 137

Computerized Scheduling of Bar Code Sorters in a General Mail Facility -- Ruth Jacobson (Hughes Aircraft Company) ........................................ 153

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10:00-11:30 Session M1C
Monday, November 30
Topic: Word Recognition
Session Chairman: John Tan

- Character-based handwritten address word recognition with lexicon -- C.R. Nohl (AT&T Bell Laboratories) ..................... 167

- Using holistic features in handwritten word recognition -- Sriganesh Madhavanath (SUNY Buffalo) .......................... 183

- Context directed handwritten word recognition for Postal Service applications -- S. Tsuruoka (Mie University) ........ 199

- Segmentation-based handprinted word recognition -- Paul D. Gader (University of Missouri - Columbia) ............ 215

- Recognition of general handwritten words using a hypothesis generation and reduction methodology -- John T. Favata (SUNY Buffalo) .................................................. 237

- Using superimposed coding of N-gram lists for efficient inexact matching -- William B. Cavnar (Environmental Research Institute of Michigan) ........................................ 253

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Monday, November 30
Topic: Maintenance Technologies
Session Chairman: J. Gerard Bohan

- A model-based approach to diagnostic expert systems
  -- J.J. Knight (British Post Office) ...................................... 271

- Experience and progress with the British Post Office Socrates System -- Roger Whitton (British Post Office) ........... 281
- POST I - The Danish integrated information and training system—Per Juul Nielsen (Danish Post Office) ............291

- Open systems and equipment maintenance—Norman H. Wold (Wizdom Systems) ........................................299

3:15 Questions and Discussion

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Monday, November 30
Address Interpretation
Session Chairman: Gerardo Garcia

-A model for estimating the performance of intelligent character recognition systems using Markov chains—Jerry A. Burman (Hughes Missile Systems Group) ...........309

-Determining delivery point code on handwritten addresses—Edward Cohen (SUNY Buffalo) .........................321

-A system for handwritten address interpretation—Peggy Ganzberger (Environmental Research Institute of Michigan) ..................................................337

-A system for the analysis of machine printed address block images using contextual information—Daniel J. Hepp (Environmental Research Institute of Michigan) ...........353

-A constraint-based approach to postal address interpretation—Peter B. Cullen (SUNY Buffalo) .................367

3:15 Questions and Discussion

2:00-3:15 Panel Enterprise Systems

Panel Chairman: Richard D. Weirich

3:15 Questions and Discussion

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Monday, November 30
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Session Chairman: Bernard Bennington

-Potential role of the United States Postal Service as a provider of value added "trusted" electronic mail services for Federal Government Commerce program—Charles R. Chamberlain (United States Postal Service) ...379

-Mail processing support systems—Franco Vervloet (CPC Process Control Department) .......................393
- The GEOMOD system—George Fagan (Bowne Distinct Ltd.)...413

- Computers in Indian post offices—V.M. Kelkar (Department of Posts)..........................419

- The experience on introduction of information technologies into the trial zone of St. Petersburg—V. Uzilevski (Technopost Center).................................431

- The role of customer satisfaction surveys in designing information technology—Paul S. Goodman (Carnegie Mellon University)...........................................443

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Session Chairman: Edward Kuebert

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- Optimization of postal facilities for letter mail flow—Billy Ray Jackson (Harnischfeger Engineers, Inc.)...........475

- An analysis and simulation of the postal automated staging and retrieval system (PASRS) for the West Sacramento, California mail processing center—John C. Weller (United States Postal Service).................................489

- Tray transfer machine—Toshiro Ono (Ministry of Posts and Telecommunications)..................................505

- A Research Experiment: Handling of parcel containers in a parcel office—J.C. Burbaud (French Post Technical Research Center)........................................521

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Monday, November 30
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- Using temporal information in off-line word recognition—Venu Govindaraju (SUNY Buffalo)..............................529

- Recognition of cursive script amounts on postal cheques—M. Leroux (French Post Technical Research Center)........545
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**Volume Two**

**Tuesday**

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**Guest Speaker:** Shoshana Zuboff

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**Session Chairman:** Charles Chamberlain

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  -- Sunder Kekre (Carnegie Mellon University) 595

- Measuring and understanding drivers of costs at general mail facilities: The USPS experience
  -- Tridas Mukhopadhyay (Carnegie Mellon University) 611

- Vehicle routing and scheduling problems over street networks
  -- Lawrence S. Levy (Bowne Distinct Ltd.) 625

- High density bar codes and EDI enhance U.S. mail manifesting
  -- Rolland D. Culp (The Austin Company) 643

- FACTEDIS - A tool for generating real time diagnostic expert systems
  -- Ernst-Werner Jungst (Daimler-Benz) 659

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**Panel Chairperson:** Karen T. Uemoto
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- Improved readability of machine printed characters—Roger S. Gaborski (Eastman Kodak Company) ................ 673

- Machine printed character recognition with biological and theoretical bases—Dar-Shyang Lee (SUNY Buffalo) .... 689

- Convolutional neural networks for the combined segmentation and recognition of machine printed characters—Joe Decker (Synaptics, Inc.) ................................. 701

- Neural network recognition of machine-printed characters—Robert Vogt (Environmental Research Institute of Michigan) .......................... 715

- An address recognition system based on feature extraction from gray scale—W.J. Sakoda (SUNY Stony Brook) .... 727

- Segmentation of touching characters in postal addresses—R.G. Casey (IBM Almaden Research Center) ............... 743

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Postmaster General

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- Canada Post Corporation's point of call identifier—Don Clysdale (Canada Post Corporation) .......................... 771

- Self-organizing ZIP +4 database for parallel implementation—David S. Bradburn (TRW Financial Systems) ......... 783

- Compression for fast read-only access of a large database—Paul Filipski (SUNY Buffalo) ............................ 795

- A system for ASCII address interpretation—Alan J. Vayda (Environmental Research Institute of Michigan) ......... 809

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Tuesday, December 1
Topic: Material Handling
Session Chairman: Mason Lilly

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-A flexible system used in Postal hubs—Cheng Weizhong (The Postal Research Institute of Science & Technology).......837

-Autonomous cargo transport system—Kerien W. Fitzpatrick (Carnegie Mellon University).................................849

-Arraytag technology: a new technology for automatic package identification—Warren D. Little (University of Victoria).................................861

-A two-dimensional dense code symbology and reader for the package handling environment—Rajan C. Penkar (United Parcel Service).................................875

-TMC patented multi-nozzle ink jet printer—S. L. Hou (TMC Company).................................885

3:15 Questions and Discussion

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Tuesday, December 1
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-Information search in real-time dynamic decision-making—F. Javier Lerch (Carnegie Mellon University)........893

-Coordinated control of a distributed system for transport and staging of mail trays—James C. Flannery (United States Postal Service).................................913

-Real-time multi-user cooperative scheduling in a complex environment—Greig Greenwald (International Business Machines).................................927

-Intelligent real time operation systems modeling and simulation—James Baker (Kenan Systems Corporation).....939

-Improved vehicle routing using generalized assignments and TABU search—William R. Stewart, Jr. (University of Colorado).................................945

-Automated routing guide for American Airlines cargo—Kirk Baumgartner (American Airlines Decision Technologies).................................957