Reading the Handwriting on the Letter

UB research that gave new life to the US Postal Service

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A Machine Learning Success Story
Pioneering work on Postal Automation at UB

Handwriting recognition for postal automation

Saving hundreds of millions of dollars in labor costs for the US Postal Service

Over 95% of US letter mail sorted without manual intervention

Technology licensed to Australia Post and UK’s Royal Mail


Highlighted in the CCC Symposium on “Computing Research That Changed the World” (2009)
Postal automation – A timeline

1753  Benjamin Franklin (1st Postmaster General) began sorting mail

1950s  First American-built sorters

1965  Machines could barely read print

1982  First computer-driven, single-line OCR installed in LA

1994  Siemens and Lockheed Martin tasked “to teach machines to decipher scribbling”

1996  UB research helps USPS start machine-reading handwritten addresses, boosting efficiency and saving millions of dollars each year
Making Handwriting Recognition a Reality

Jan. 24, 1997:
“This project represents a major step forward, not only for the Postal Service, but for technology in general,” said Edward Kuebert, manager of image and telecommunications technology at USPS. “It will do the seemingly impossible - help postal machines read handwritten mail.”

Computing Community Consortium - March 25, 2009:
“Using a learning-based system developed at SUNY Buffalo by Venu Govindaraju and colleagues, 25 billion letters a year are processed automatically by the US postal service — bar-coded for precise delivery — saving hundreds of millions of dollars...”

Handwriting recognition for postal automation
(click image for video)
Source: Systems at Work: a USPS TV Production
https://www.youtube.com/watch?v=WX16-52bHvg
Developing Smarter Human/Machine Systems


Remote Encoding Centers (REC): Manual keying of mail not read by machines. (click image for video)

1997:
- 32,000 employees, 55 centers
- 19 billion letters manually keyed

2014:
- 1,600 employees, 1 center
- 2 billion letters manually keyed

Real-time processing (click image for video)
- 15 mailpieces/ second
- UB system ported to multiple platforms
- Modular pipeline
- Licensed to Australia Post, Royal Mail

2014:
- Over 99% of all letter pieces (98% handwritten) sorted without any manual intervention

Videos Source: Discovery/Science Channel’s "How It’s Made" Mail episode
https://www.youtube.com/watch?v=xqoUn4g4elU