

REGIONAL WINNING ENTRIES IN THE JOHNS HOPKINS FIRST NATIONAL SEARCH ON PERSONAL COMPUTING TO AID THE HANDICAPPED

HEARING, SPEECH, AND LANGUAGE

Computer-Assisted Transcription System

Robert K. Binford

The Computer-Assisted Transcription System uses the computer and peripheral devices to create a flow of enlarged, plain language, readable text, as it is spoken, with no discernible delay. It is designed to be used in meetings, conferences, and other assemblies to assist the hearing-handicapped in lieu of the less widely available skill of sign language.

Learning Finger Spelling

David N. Boyer

A computer graphics program is presented for deaf or hearing persons who need practice reading finger spelling. It features a representation of right-hand positions on a CRT, where the alphabet can be automatically displayed or single letters can be translated. A multiple-choice quiz-mode finger spells a word.

Universal Translating Modem

Richard C. Bozzuto, Jr.

The Universal Translating Modem enables a home computer or terminal to communicate with Weitbrecht TTY's, Bell 103 modems, and the DEAFNET computer network. This single, inexpensive unit provides access to a large and rapidly expanding network of data bases, facilities, and private individuals without sacrificing compatibility with existing TTY's.

Communicator for the Non-Verbal

Norman R. Brines, Howard Lambert

The Communicator for the Non-Verbal enables a person who cannot speak, but who can read and is able to push any one of four large buttons, to communicate via a TRS-80 microcomputer. The operator may select sentences, words, letters, numbers, common word endings, punctuation, and special symbols and hence may print out nearly anything desired.

Augmentative Communication Devices

Joseph T. Cohn

The Augmentative Communication Devices programs turn a personal computer into comprehensive control and communication prostheses for the most profoundly handicapped. Switches have been developed to let the individual use a variety of selection techniques to form messages for printing, speech synthesis, or environmental control. An automated evaluation system facilitates prescription of the communication device.

Computer Communication Assistor

Kendall Crookston

The Computer Communication Assistor is a computerized module for the multiply handicapped who cannot speak or otherwise express themselves. Any controlled movement that can actuate a switch enables users to have their thoughts printed on a screen, on paper, or even voiced by the computer itself.

SONOGRAM

James F. Duffy

SONOGRAM is used to provide visual feedback to deaf persons to help them learn to speak. This is accomplished through a video display of the volume and frequency characteristics of their speech as they change over time.

Message Converter

Robert E. Glaser

The Message Converter permits deaf individuals to receive telephone messages without special equipment at the sending party's location. A simple sending code converts a sequence of Touch-Tones™ into an alphanumeric message, displayed via an ASCII CRT terminal, ASCII or Baudot teletype, or visual Morse code.

Lip-Reader Trainer

Robin L. Hight

A means of converting typed sentences into animated mouth movements, thereby providing a flexible training aid for the teaching of lip reading, is offered by the Lip-Reader Trainer. In addition, a method of postevaluation is offered.

Computer Enhanced Language

Michael Hillinger

Most augmentative communication devices simply repeat the telegraphic nature of the user's input. The Computer Enhanced Language software takes simple verbal input of one to four words and produces grammatically correct sentences in audible form. This computer-enhanced speech program can be used for cerebral palsied, aphasic, deaf, and mentally retarded clients.

VCATS TRS 80 for Finger Spelling

Thomas J. Huston

VCATS is a Visual Computer Augmented Teaching System designed to run on an inexpensive color graphics microcomputer. The system is in English and is user-oriented. Real-time finger spelling, at student-controlled speed, provides individualized interactive instruction.

Programs for Learning Disabled

Sandra J. Jackson, Judy M. Simmons,

Tony Wedig

Programs for Learning Disabled have been designed to aid students with varying degrees of learning disabilities by addressing the following problems: (a) motivating underachievers, (b) improving underdeveloped basic skills, (c) increasing concentration and comprehension skills, (d) assisting the emotionally disturbed toward normal adjustment, and (e) assisting in the rapid adoption of the English language.

DTMF Telecommunications for the Deaf

Arthur B. Johnson, Robert F. Hagstad

A comprehensive system of enhanced telecommunication for the deaf and/or mute user is presented. An inexpensive hand-held receiver converts DTMF (Dual-Tone Multifrequency) signals, which may be sent from any Touch-Tone™ telephone, to a visual character display. Advantages over existing methods are discussed.

Learning Finger Spelling

Daniel K. Johnston

Learning Finger Spelling is a program that teaches sign language to the hearing impaired or others who wish to communicate with the deaf. This is accomplished by means of video graphics and some written video displays used in various drills.

Communication Aid with Scanning

Randal L. Jones

The Communication Aid with Scanning uses a modified row/column scanning method in which the character arrangement changes to reduce the delay required to select the next letter in any given context. By tailoring the character tables with use, speed increases may be expected.

Blissapple

David P. Kelson

The Blissapple is a trimodal program that can be used as a self-contained Blissymbol displaying/printing aid or in conjunction with other communication aids to make them into Blissymbol printing aids. It allows complete user control of all Blissymbols and their accompanying definitions.

Computer Finger Spelling

Kenneth C. Kihneman, R. Mark Salathiel

Computer Finger Spelling helps to develop the

finger spelling skills of the deaf/hearing by using a series of word drills in which the computer uses the 26 hand positions of the Sign Language Manual Alphabet. Actual hand motion is displayed on the computer screen, with each word being spelled in sign language.

COPE II

Robert Kniskern

COPE II is a microprocessor system operating in parallel with a personal computer. It multiplexes the existing keyboard with the alternate character selection, manages the character select display, monitors a user-variable character selection mechanism, and provides character sequence phrases. Normal operation is maintained, and no custom user software is necessary.

Portable Telecommunications for the Deaf

Harry Levitt

A TRS-80 pocket computer is used as a portable telecommunication system for the deaf. It can store, transmit, and receive messages over any telephone. The system is significantly less expensive than a teletypewriter and costs less to operate because of more efficient use of the telephone channel.

Vocalization Trainer

Kenneth Macurik

The Vocalization Trainer is a program to shape appropriate pronunciation using a vox box. Words or sounds may be placed in the computer for use as a model. Upon imitating or vocalizing, the hearing-impaired student receives a visual display that can be compared to the model sound for both length and modulation.

Communicating with Menus of Words

Margaret F. Maier, James A. Till

Communicating with Menus of Words is an expressive language program that enables a handicapped person with limited motor control to form simple sentences. Menus of familiar words are presented and selected by entering a corresponding number. The selection is then maintained until subject, verb, and object have been chosen. The disabled person may then choose to print the sentence on a small printout.

Voice Communications with Special Inputs

William D. McFarland

A microcomputer and voice synthesizer are used to implement a communications aid for the severely disabled. Several forms of visual prompting, including Blissymbols, are available from which the handicapped user may select or create a phrase and verbalize it. Special devices, including a large-sized numeric keypad and a bio-feedback device, provide alternatives to the keyboard.

Language Therapy for Aphasia

Russell H. Mills, Richard P. Thomas

Language Therapy for Aphasia is used in the rehabilitation of aphasic patients who have difficulty comprehending spoken language. It uses high-resolution pictures and digitized speech as stimuli and can be executed with independence by the patient. The program files performance data and provides the clinician with these data and summary statistics on request.

Environmental Status Board for the Deaf

Ronald R. Mitchell

The Environmental Status Board for the Deaf is an ongoing project to interface and program a computer to provide monitor, alarm, and display functions for a deaf couple in a single-family home. A control and display panel was designed and built, as well as a number of interfaces for

bringing signals to the computer and controlling house lighting.

Computerized Tape Printer

Kirk M. Reid

The Computerized Tape Printer allows a cerebral palsied individual without speech, without sight, and with severe involuntary movement to create a written message.

Firmware Card and Training Disk

Paul F. Schwejda, Judy McDonald

With the use of the Firmware Card and Training Disk, the computer becomes a mechanical pencil and paper for the severely physically handicapped (and perhaps nonspeaking) child. Teachers enter problems, words, or worksheets. By using one or two input switches, students are able to do schoolwork without help. Output is on video and hard copy.

Synchronous Oriented Receiving Terminal

Scott B. Solomon

Sort-2 (Synchronous Oriented Receiving Terminal) uses the large-scale integration of the 6800 microprocessor to decode a series of continuous radio signals. Data are displayed on an LED device in TV news crawl fashion. A dedicated station could broadcast these pulsating signals for a

hearing-impaired audience, thereby putting the audience in constant contact with current events.

Decision Making for the Hearing Impaired

Casey G. Stone, Gwen C. Nugent

Decision Making for the Hearing Impaired consists of two interactive/video disc computer programs designed to teach decision-making and reasoning skills to upper elementary hearing-impaired students. The videodisc provides visual support, while the microcomputer generates textual/caption information, controls branching logic and videodisc display, and records student responses.

Emergency Deaf Communication System

William M. Walsh III

An Apple II microcomputer is used to provide a fast emergency triage for deaf communications. This computer, when used by a trained staff member at the National Crisis Center for the Deaf, can quickly elicit information required for appropriate emergency service referral. This system serves as a low-cost model for local emergency deaf hotlines.

MICRODAN

Robert H. Weitbrecht

MICRODAN is a dial-a-news system that en-

ables users of telecommunications services for the deaf to access information of interest to the deaf community. A number of files of different categories are individually selectable for readout. High-speed mode is available for loading a distant MICRODAN.

Learning Finger Spelling

Albert J. Welsh, Thomas G. Mancuso, Stephen Licata

The manual alphabet or finger spelling is the key to communication with and among deaf people. It enables the hearing disabled to communicate more accurately and on a more sophisticated level than with conventional signs alone. A personal computer is used to teach the manual alphabet to the deaf and their hearing friends in a stimulating and expeditious manner.

Versatile Portable Speech Prosthesis

Douglas H. Williams

The Versatile Portable Speech Prosthesis is a battery-operated, computer-based system that allows a nonvocal user to create, edit, store, and speak on demand any words or long phrases in English. Controls used depend on the motor capability of the user, from a single switch to a full keyboard.



LEARNING DISABILITY

Counting Skills for Learning Disabled

Don K. Crowther

Counting Skills for Learning Disabled is a computer-based instructional program that teaches elementary counting skills to learning-disabled students. The lessons use high-resolution color graphics, music and sound effects, practice exercises, and tests. The program also contains various lesson-related aids for the special education teacher.

Computer Aided Learning in Early Childhood Education

Mary G. Hatch

An Apple computer, a speech synthesizer, and a light pen are used to teach children at the preschool age levels and above. The execution of the program requires minimal supervision and is designed to be carried out by young children in general, and particularly those who exhibit impairments in physical and/or mental development, including restricted range of motion and deficiencies in vision and/or hearing.

"VAKT 80" Letter Tracing for Dyslexics

Fred E. Kagel

"VAKT 80" is a computer program that simulates the V-visual A-uditory K-esthetic T-actile or multisensory reading techniques for dyslexic and learning-disabled students. The student traces words on a video screen using a light pen while a voice synthesizer simultaneously

sounds out the proper letter-sound combinations of the words.

PRIMER81, Training System for Dyslexics

Bruce R. Land, David M. Farmer

PRIMER81 is a user-oriented computer graphics program that enables: (a) self-diagnosis of specific difficulties in pattern recognition; (b) alteration of font and presentation time to improve discrimination; (c) instantaneous recognition training for common words and word groups; and (d) motivation through rapid feedback, amusements, and adaptive drills matching individual preferences.

Dyslexia Diagnostic Tool

Carolee Mountcastle

The Dyslexia Diagnostic Tool is a computer application that uses interactive graphics as a diagnostic and treatment tool for learning-disabled children. It focuses specifically on children who have a type of dyslexia characterized by letter reversals. Color graphics will highlight language symbols using voice prompts, and the subject will respond with touch and voice input.

Math Problems for Learning Disabled

Parwane Parsa

The Math Problems for Learning Disabled program generates random math problems. It can be used with a printer, to give students worksheets, or to drill children with learning disabilities. This program is a timesaver that frees the teacher from

writing worksheets and makes learning interesting and fun for the student.

CAI for Learning Disabled

Richard D. Swenson, James C. Kingman

CAI for Learning Disabled is a group of six drill-and-practice type programs that were designed to be used in a self-contained special education classroom for educable mentally retarded and learning-disabled elementary-school-aged children.

Improving Math and Reading Skills

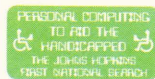
Joseph L. Terpenning

The Improving Math and Reading Skills program was designed to encourage the learning disabled to improve math skills (for every four questions answered correctly, a star appears on the screen), increase reading speed (the story can be read at increased speeds as the child progresses), and improve spelling (a look and remember concept).

PrestoDigitizer

David D. Thornburg

The PrestoDigitizer is the lowest cost commercial device that allows low-cost microcomputers to accept hand-printed character input. The adaptive nature of this device allows the user to teach the computer his or her own printing style, thus making this device most useful for users who are unable to use the conventional computer keyboard.



MENTAL RETARDATION

Driver's Education Drill for Learning Disabled

V. Maleta Blessing

A driver's education drill, entitled "Drive to Live," is designed to aid the learning-disabled student secure a driver's license. It is hoped that, after using it, the student will be able to pass the road rules test. The presentation consists of a TRS-80 computer program on cassette tape.

Specialized Training Program and Client Data Base

Shawn M. Boles, Ronald W. Wheeler

Social service programs seeking to aid the mentally retarded are almost universally lacking in adequate data acquisition needed to guide and improve the programs. The Specialized Training Program and Client Data Base uses an in-house microprocessor-based system to collect data and provide immediate feedback in an effort to improve the quality of service for severely handicapped adults.

CAI with Voice Output

James O. Calvin

The thrust of CAI with Voice Output is to combine speech with a computer-assisted instruction system. Using digitally recorded speech, students perform exercises in telling time and in sight vocabulary. The CAI system verbally tells the student to set the time or point to a particular word.

Light Pen Learning Drill

Mary G. Hatch

The Light Pen Learning Drill is a computer learning drill for the mentally retarded and neurologically handicapped in which the dialogue between the computer and the child is both visual and aural. The child points a light pen at the TV display after a request is made by the computer. The child is then vocally congratulated for a correct response or encouraged to try again if the response is incorrect.

Teaching Money Skills

Jamelle Loehr

Teaching Money Skills is a computer program that teaches money identification and counting skills to retarded students. Digitized voice is used to provide instructions and feedback to the user. The student responds through the use of a game-paddle pushbutton and is guided through a computer-aided self-charting sequence at the end of the lesson.

Vocal Math Drill for Learning Disabled

Alfred E. Springer

Vocal Math Drill for Learning Disabled is a computer-generated arithmetic drill (addition) for the person with a learning disability. Problems are given both visually by the CRT and orally by the Speak-N-Spell. Both visual and oral statements encourage the student as a marker is moved toward a goal by correct answers.

MOVEMENT

Independent Switch Interface with TRS-80

Michael A. Chase

Using the Independent Switch Interface and a key switch, a person with coordination problems can interact with any program running on the TRS-80, except the Lower Case Display. Programs that run normally under TRS-80 Disk Operating System can use this program for input without modification.

HCINP, Alternate Input Interfacing

Richard Chuprinko

The Handicapped Input (HCINP) Subroutine is designed to provide a method of input, other than a keyboard, to a microcomputer. Individuals who are quadriplegic or handicapped by various motor-control disabilities are aided in operating a microcomputer for personal, business, occupational, or therapeutic purposes.

Computer-Based Therapeutic System

Thomas M. Cook

A Computer-Based Therapeutic System is offered for use in rehabilitating patients with a number of walking disabilities. Using a microcomputer as an interactive controller, theories of motor learning are applied to assist these patients in regaining the weight-bearing and weight-shifting abilities necessary for safe and efficient ambulation.

Single Switch Communication System

John E. Dalhaus

The Single Switch Communication System allows a person with limited movement to display and print a message, using only one switch. The system includes an eight-character alphanumeric display and an optional teletypewriter. Other features include editing and variable speed operation. The device is easy to use, low cost, and compact.

Magical

Frank L. Eppenger, Harry Pinkney

Magical is a sound-activated switch.

Menu Assisted Data Entry System

Jeffrey S. Fisher

The Menu Assisted Data Entry System provides the means for entering alphanumeric and special character data into a general-purpose microcomputer using a special-purpose impulse device and video screen menus. This system will permit the handicapped user to construct and enter character strings for a variety of stand-alone and network applications with greater ease.

EyeTracker Communication System

Mark B. Friedman, Gary Kiliany, Mark Dzmura, Drew Anderson

The EyeTracker Communication aid allows a physically handicapped person to use eye movements to efficiently control high-quality speech output. The current system, based on an Apple II computer and a small TV camera, is working in a

classroom. A battery-powered portable version, including only one custom PC board, is currently being built.

"Lightboard," Alternate Computer Input

James L. Hardee

The "Lightboard" is a computer input device for people who cannot use a standard keyboard. This device uses photocell switches in place of the keys normally found on a keyboard. Although it must be custom built, it is relatively inexpensive and very versatile, and is simply plugged into the keyboard input.

Hands Free Speaker Phone Dialer

Jackson D. Harris

The Hands Free Speaker Phone Dialer is a solid-state control unit attached to a 16-number telephone dialer memory. It allows a totally paralyzed person to use a telephone to answer incoming calls and originate outgoing calls by voice commands.

Barrier Information from Videotex

Douglas Hatch

A Videotex System in the Hartsfield International Airport presents helpful information about barriers at airports around the world and also in hotels, public structures, and major office buildings in Atlanta, Ga. Information on community activities, equipment rental and repair, and other special services are also presented.

Electronic Keyboard

Richard A. Henle

The Electronic Keyboard is a personal computer-based device designed to replace character-to-character typing on keyboard-driven systems for those without the use of their hands. Instead, the words, commands, and entire sentences are pointed to on a separate video screen with a chin-activated joystick. The system is easily expandable to voice input.

Smart Wheelchair

David L. Jaffe

To allow quadriplegics independent mobility, a "smart" microprocessor-based electric wheelchair has been developed. Ultrasound distance-ranging technology is employed to track the user's head in two-dimensional space. These data are then used to determine the chair's direction and speed. Noncontacting motion control, obstacle detection, and wall following are implemented features.

Neuromuscular Control of Microcomputer

Donald J. Kark

The Neuromuscular Control of Microcomputer device allows people with immobile or nonexistent limbs to control a wheelchair directly and a computer indirectly. It processes the neuromuscular signals given off by the person's jaw and creates a digital signal. The signal is then coupled, with time as a factor, to the computer or wheelchair control electronics.



NEUROMUSCULAR DISORDERS

Interfaces for Disabled

Margaret R. Barker, William R. Hastings

Interfaces for Disabled is a self-contained, portable means of evaluation and training with interfaces (single switches, joystick) that can be used in conjunction with mobility, communication, and environmental control aids by individuals with physical disabilities. This microprocessor-based system facilitates quantitative measurements of performance with the interfaces and visual and/or auditory outputs.

Message Generator for the Nonverbal

Richard Buus

A computerized Message Generator for the Nonverbal with limited motor control has been devised. By hitting any alphanumeric key on the keyboard or by closing a simple external switch, the handicapped person can select word categories, and eventually words, in order to generate sentences on the screen or on a printer.

Pneumatic Binary Switch Input for TRS-80

Robert Buus

A means is described for a neuromuscularly handicapped person to easily and economically provide binary input to a Radio Shack TRS-80 computer. It consists of a pneumatic tube or wedge switch interfaced to a simple battery-operated oscillator circuit that, in turn, interfaces to the cassette port of the computer.

Control Programs for Severely Motor Impaired

E. Paul Goldenberg

Four working control programs illustrate a design for individuals with severe motor impairments. Graphics tablet and analog inputs were selected to maximize informational bandwidth. Neuromotor "noise" (e.g., atetosis) is filtered out of the input, often revealing surprisingly great neuromotor control and enabling the individuals to write, draw, play TV games, etc.

Computer Evaluation Kit for Mobility Impaired

John S. Kishpaugh

The Computer Evaluation Kit is an evaluation unit for computer skills and a computerized self-care program. A mobile (TI99/4) computer is used for teaching. A motivated, severely mobility-impaired person may program the kit for data entry, word processing, and simple medication and care management.

Motor-Handicapped Support System

Reuel O. Launey III

A multifunction printed circuit board and software package has been designed as an aid for a quadriplegic or other motor-handicapped individual. The low-cost board is plugged into a personal computer and gives the handicapped person voice or time control of both the computer and a number of electronic functions.

User Definable Keyboard

Ronald S. McCuiston

The User Definable Keyboard is a computer program to redesign the arrangement of keys on a typewriter or computer keyboard. After the user enters any text into his computer, the program gives a statistical analysis showing a count of each character struck and the use of each finger and hand.

Add-On Remote Keyboard

Brian D. McKean

An Add-On Remote Keyboard has been designed for the Radio Shack TRS-80. Features include zero "key" travel distance, low cost, and easy interface to the TRS-80. Single-stroke uppercase keys allow one-hand (wand) operation; two-tone audio feedback indicates key entry and double key entries (DD, YY, etc.).

Communication and Environmental Control

Leslie A. Nieves, Richard S. Campbell

Communication and Environmental Control is a microprocessor-based communication and environmental control system that combines flexibility and ease of operation at a relatively low cost. It can function as an electronic typewriter, word processor, emergency alarm system, telephone answering and dialing machine, remote control for electrical outlets, timer, and entertainment device.

UNICOM: Communicator for the Disabled

Derek Rowell, George F. Dalrymple

A video display, microprocessor-based system, the UNICOM, has been developed as a communication device for severely motor-impaired nonvocal individuals. The UNICOM can be adapted to serve users with many different motor impairments by selecting the appropriate user/machine interface (switches or controls) and without modifying the basic unit.

VIDEO-SCROLL Switch Communicator

James H. Herzog

VIDEO-SCROLL is a communication aid providing greater independence to individuals with neuromuscular handicaps that prevent speech or typing. A contact closure transducer directs a comprehensive text generator and editor that produce, store, manage, and print large quantities of error-free text.

Communications, Control, Music, Graphics

Frank S. Holman

A communications, control, music, and graphics generator has been devised for quadriplegics and others with severe motor disabilities. The system is menu-driven, with the menus being presented visually and aurally. The human interface is a single response made by a thumb button, eye blink, or touch switch.

Programming Interface for Motor Impaired

Jeff L. Levinsky

Programming Interface for Motor Impaired runs on an unmodified Apple II computer and allows different application programs (not necessarily developed for the handicapped) and a powerful interface program to run concurrently on the same computer. Communication between the applications and the interface increases ease-of-time.

NEUROLOGICAL DISORDERS

Optically Actuated Keyboard System

Theodore W. Cannon

The Optically Actuated Keyboard System (OAKS) was developed for persons with handicaps who lack the physical ability to control manual keyboards. The prototype is used to control a Texas Instruments Speak-N-Spell; it has been demonstrated to be effective with cerebral palsied children.

Switch Control of Microcomputer

Arthur S. Gaylord, Stanley Smith, Peter Beak

Switch Control of Microcomputer is a program to aid persons with neurological diseases or severely limited dexterity in a variety of tasks, including message writing, control of lighting and appliances, and telephone dialing. The program is controlled entirely by a button that is used to select items from a menu addressed by a moving cursor.

VISION

Audible Tone Readout/Digital Display

William H. Alliston

The Audible Tone Readout/Digital Display is a microcomputer-based device that provides an audible readout (tone encoded) for use by the blind. Using this device, a blind person can read typical 7-segment digital displays now used on industrial instrumentations and personal-use electronic equipment, process and digital lab instrument clocks, frequency counters, digital dials, etc.

Computerized Mechanical Hand for Deaf-Blind

Winalee E. Beeson

The Computerized Mechanical Hand for Deaf-Blind is a microcomputer-controlled mechanical hand that reproduces the manual alphabet. When an alphabetic key is pressed on the microcomputer keyboard, the hand will finger spell the letter and a deaf-blind individual can "read" it. This will allow those deaf-blind individuals who are unable to use the tiny braille pads to communicate over the telephone lines.

Total Talk

Deane B. Blazie

Total Talk is a computer terminal that vocally speaks any information that a sighted operator reads, eliminating the vision requirement of working with a computer. The terminal was developed by Maryland Computer Services for the blind computer user. Existing installations are in both the vocational and educational environments.

Braille Embossing Calculator for the Blind

David A. Des Autels

The Braille Embossing Calculator for the Blind is a calculator modified for use by the blind or visually impaired.

Braille Text Embossing

Randy W. Dipner

Braille Text Embossing is a system developed to produce low-volume, low-cost braille text using off-the-shelf microprocessor hardware with minor modifications. The system is functional today and requires only limited additional work to be made available to the community.

Coded Communicator and Editor

Jean M. Riley, Richard Roa

The Coded Communicator and Editor consists of a program that allows a handicapped individual to create error-free typed text with a minimum of key strokes. It consists of a text editor and a unique method of using codes for word entry.



Rehabilitation for Brain Injured Adults

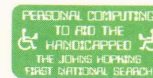
Rosamond Gianutsos, Carol Klitzner

Rehabilitation for Brain Injured Adults programs are designed for survivors of stroke, head trauma, and other injuries to the brain. Three visual perception programs include Reaction Time Measure of Visual Field, Searching for Shapes, and Speeded Reading of Word Lists. Four programs focus on memory: Free Recall, Memory Span, Triplet Recall, and Sequence Recall.

Voice Entry Computer Work Station

Eugene Spalding

The Voice Entry Computer Work Station and the specified hardware will allow a neurologically or movement-impaired individual to accomplish the following: (a) work in data entry or programming, (b) communicate via telephone and letters, and (c) control the home environment. This gives the user greater independence by using direct voice entry to control a home computer.



Orator, Talking Terminal

Peter Duran

The Orator is a combination of computer hardware and software that can enable a personal computer to speak its output, rather than print it on a terminal screen or piece of paper. Access to a personal computer could aid the blind in innumerable ways - from keeping financial records to storing recipes.

Computer Controlled TV Image Enlargement

Sandy H. Edmonds

The Computer Controlled TV Image Enlargement allows variable speed movement of the X-Y table of a closed circuit television system. This system requires a minimum amount of gross and fine motor control by low vision users who are also orthopedically or neuromuscularly impaired.

SIGHT

Peggy S. Eyrich

SIGHT is a hand-held general-purpose terminal device used by visually impaired persons to communicate effectively with any computer equipped with a standard serial interface connection (RS-232). It will be inexpensive enough to allow an employable person to own one. A cassette recorder in the device allows off-line entry to store data for future use.

Introduction to Computer with Synthesizer

Richard Gage

Introduction to Computer with Synthesizer provides an introduction to the computer by means of a dialogue between the system and the user. It helps the user to develop confidence in his ability to respond to, and feel comfortable with, the system. This program should encourage the user to develop further skills by providing a pleasant and informative first-time experience with the system.

Random Access of Digital Voice Records

Raymond Glenn

This random-access digital system for recording spoken text for the blind features an annotated table of contents, paragraph headings, figures, etc., thereby letting a user randomly select passages by content. It also enables the user

Electromyographic Control of Microcomputer

Laurence R. Upjohn

The Electromyographic Control of Microcomputer demonstration system consists of a pulse-width modulated FM transmitter that picks up and transmits the electrical activity of a voluntarily controlled skeletal muscle group. This signal is used to control a computer (in this system, an Elf II COSMAC 1802 computer) with a video display providing a communication or environmental control ability for the severely handicapped.

Interactive Programming for Motor Impaired

Russel W. Van Norman

The person with minimal extremity function, as in quadriplegia, cerebral palsy, or multiple sclerosis, can communicate, control the environment, and be entertained using the Interactive Programming for Motor Impaired device for a microcomputer. A software program is included that demonstrates the use of the interface to enhance the quality of life.

Communication Using Tokens

Chris E. Young

Communication Using Tokens allows persons unable to use a keyboard to access a computer. A set of 64 frequency-arranged, multicharacter tokens is scanned and selected by any device that can be connected to a single input bit. These tokens are based on abbreviations used in Grade 2 braille.

to speed up the output rate of speech without frequency distortion, a form of speed reading.

KANSYS, Talking Operating System

Charles E. Hallenbeck

Software is well behind hardware in providing speech access to computers. The KANSYS Operating System and its "Talking Terminal" program help to close this gap. Blind persons will find it easy to realize the power of personal computers with a system fully committed to speech communication. Blindness is no handicap in using this system.

Product Identifier for the Blind

Jay C. Hardin

The Product Identifier for the Blind is a home computer with a light-sensitive transducer and a voice or braille readout to read the spaced line markings on food cans, thus allowing a blind person to determine their contents.

APPLE Sound Outputs for the Blind

Richard Hartness

APPLE Sound Outputs for the Blind describes four programs written for the Apple II computer that allow a blind person to use the computer as easily as a sighted person. They provide output in spelled speech, synthesized text-to-speech, and Morse code. The Morse code program does not require additional hardware; the others do.

Automatic Braille Transcription System

John J. Hoefler, Paul F. Arnold, Max Waddell

The Automatic Braille Transcription System automates the braille transcription process. Any typist performs the input, allowing the computer to transcribe and output braille text directly. Proofreading and editing remain the transcriber's responsibility. More efficient use of human resources and increased availability of scientific texts result.

Braille-Edit

David F. Holladay

Braille-Edit is a text editor for the Apple II computer designed to deal with braille-oriented material. It has an optional braille CRT display and an optional braille keyboard mode (6 keys,

like a Perkins braille). It is designed to allow a sighted person to download material to a versa-Braille (paperless braille) or a braille computer printer.

PALTALK, Spelled-Speech Terminal

Barry R. Horowitz, Benjamin Streepey, Dung T. Ton

PALTALK is a spelled-speech interface for a computer terminal that was created to provide a visually impaired person with access to the terminal's display. PALTALK can store forty eight 80-character lines in its buffer, and the user gains access to that information via the switches on PALTALK's control box.

Pathfinder - Navigational Aid

John C. Knight

Pathfinder is a system for using geographical data to create a set of navigational instructions for the visually impaired. The system is sufficiently general that it can be used for buildings, building complexes, and small areas of cities. The software is written in Pascal to ensure compatibility with personal computers.

Braille Reading Machine

Harry Kosalos

A braille reading machine has been devised that, by forming braille letters one at a time, allows you to read whatever is on the computer screen. Cursor control buttons allow you to move to any position within the page of text, and automatic cursor movement scans the text at selectable speeds.

Reading Machine for the Blind

Raymond C. Kurzweil

The Kurzweil Reading Machine for the Blind converts ordinary printed or typed materials in any size, style, or format of print into unlimited vocabulary full-word synthetic English speech at speeds up to 1½ times normal speech, enabling blind and dyslexic persons to read books, magazines, correspondence, and other materials.

Talking Computer Terminal

James A. Kutsch

The talking terminal is an intelligent terminal with both a visual CRT display and a computer-generated synthesized voice output. Information appearing on the CRT screen is effectively

"read" to a blind user through the synthetic voice. The terminal can be connected to any host computer via an industry standard RS-232C interface. No modifications to the computer are required.

Talking Computer and Terminal

Peter B. Maggs

The Talking Computer and Terminal software turns a TRS-80 Model I with a Radio Shack Voice Synthesizer into a full-feature talking computer and talking computer terminal for blind users. It also may be used as a speech substitute for speech-handicapped users.

Single Character Volatile Braille Output

Klaus H. Mewes

Single Character Volatile Braille Output is an electromechanical device, for use with a micro-computer that displays characters in braille format. Six small pins move up and down in braille-dot raster (2 × 3). Characters are read with a stationary fingertip. Information is displayed serially, one character after the other. This device substitutes for the CRT monitor for visually disabled persons.

Bar Code Product Identification

Richard J. Probst

Bar Code Product Identification is a device that, by synthetic voice, audibly identifies the contents of packaged goods as the visually handicapped scan the bar code (e.g., Universal Product Code) on given items. The bar code prompts generation of appropriate vocabulary. The device also reads English text encoded in bar-code format.

Braille Translation System

Joseph Renzi

A Grade I to Grade II braille translation system has been designed to meet the special needs of blind persons in the telecommunications field. Disk drives are not required, which lowers the cost of the hardware.

Computer Terminal/Musical Tone Output

David A. Ross

The Musical Tone Output is a computer terminal uniquely designed to meet the needs of the visually impaired - it enables them to "read" text at speeds in excess of 200 words per minute. It "displays" text in the form of musical tones, all

of which are components of an easily learned musical language.

Vocalization of Computer Output

James S. Schaefer

Vocalization of Computer Output is a menu-driven program that will give a blind programmer the ability to proofread his or her program. Using a Radio Shack Model I Level II Computer with Voice Synthesizer, the blind programmer can have a single line or an entire program read back to him.

Programmable Spinning Optics Technology

Sidney H. Slavin, John L. Wilkinson

Programmable Spinning Optics Technology permits new treatment for amblyopia (lazy eye blindness) and strabismus (cross eyes); orientation and mobility help for severe visual field loss; and visual stimulation for damaged infants and adults. Special invested optical lenses spin before an eye and permit very extended orthoptic and low-vision care.

Braille Word Processor

Robert E. Stepp III

An inexpensive but full-powered braille word processing system has been developed for use by transcribers of both text and nontext (e.g., musical scores) documents. Braille is keyed into the system and then displayed in standard braille format on the screen, revised using a powerful text editor, and embossed by a computer-adapted Perkins braille.

Soft Talker

John J. Yurek

ST (Soft Talker) is a software speech synthesizer for the TRS-80 computer. It requires no hardware to output speech via the cassette port. BASIC is used to control the machine language speech synthesizer, thus making it very easy to use.

Paperless Braille Microcomputer

Andris Zingis

The world's first 40-character paperless braille microcomputer gives a blind user access to all the power of the microcomputer, as well as to any larger computer, through teleprocessing. Mechanically latched eight-dot braille cells differentiate 255 characters with speed and accuracy. This system offers computing made easy for the blind.



NONSPECIFIED DISORDERS

Handi-Writer

Howard F. Batie

Handi-Writer is a low-cost total system (under \$1000, including computer) that permits one or two nonvocal, severely physically handicapped persons to interact, write letters, communicate with others, and control external devices. In addition, it provides a means of evaluating individual language and mathematical abilities and provides tutoring in these areas.

Job Matching for Handicapped

Klaus M. Blache

Job Matching for Handicapped is a systematic computerized procedure to match capabilities of handicapped persons to potential job-related tasks. Capabilities of handicapped persons are equated to typical work-population-capable values that, in turn, are evaluated against standardized job demands. The system can be used to locate, design, or redesign jobs (tasks) for the handicapped.

The Ability Phone

Fred C. Eifert

The Ability Phone™ is a microprocessor-based telecommunications and environmental control device that assists persons with a wide range of disabilities. Six independent living and vocational functions can be activated from the keyboard or from external switches. The device is

adaptable in both physical and program configuration from the keyboard.

Learning Environment for the Autistic

Richard E. Frost

A computer-based learning environment provides autistic persons and others who suffer from a lack of expressive language with a consistent and nonthreatening environment with which they can interact. As a result of this interaction, the autistic person's use of expressive language may improve.

Talking Electronic Dictionary

James D. Sullivan

The Talking Electronic Dictionary, now only a paper design, would be an electronic desk dictionary specifically designed to aid the blind, mobility-impaired, learning-dysfunctioning, and other handicapped individuals in using a new kind of dictionary that is quicker and easier to use than the standard dictionary.

Bus Route Planning Package

Gary W. Tubb

The Bus Route Planning Package offers five highly interactive programs that allow quick graphics tablet updating of handicapped student bus stops to adjust for absent students while optimizing bus routes based on bus size, time, distance to school, and disability of the student.

High-resolution color graphic plots of routes are displayed on the 48K Apple microcomputer.

Adaptive Computer Inputs and Programs

Henry M. Wallace

Adaptive Computer Inputs and Programs offers a working system of three adaptive input devices, an Apple II microcomputer disk drive, and 13 computer programs. Five systems now in use serve nine severely handicapped cerebral palsy victims. By selecting programs from a menu, the user is able to (a) communicate, (b) remember, (c) learn, (d) play games, and (e) be creative in art and music.

KNOWHERE Information Utility for the Disabled

Joel S. Yudken, Joseph A. Villareal, John S. James

The KNOWHERE community-based information utility for the disabled, now in prototype development in Santa Clara Valley, Calif., is designed to provide an interactive, multiuse information and telecommunication network for the disabled community software includes a unique "bulletin board" program written in FORTH. Hardware consists of small microcomputer systems, speech synthesizer/recognition devices, and data terminals. This system will have wide applicability to many types of users and is accessible for most physical disabilities with the aid of adaptive devices.