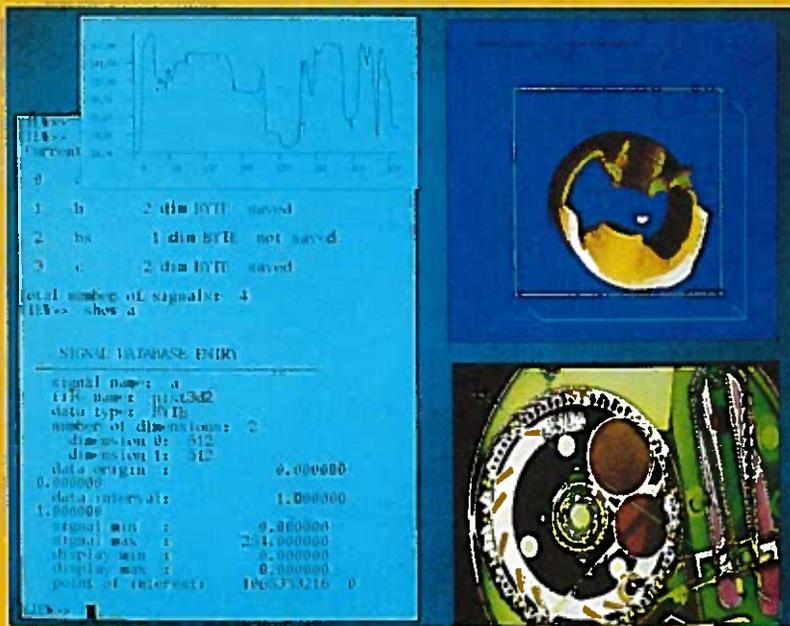


View™

GENERAL PURPOSE IMAGE ANALYSIS AND DISPLAY PROGRAM

University of California
Lawrence Livermore
National Laboratory



- Window-based user interface
- On-line help
- Powerful image processing capability
- 3D Capability
- Supported on VAXes and Sun workstations
- Available at no charge

VIEW is co-funded by Lawrence Livermore National Laboratory,
the Strategic Defense Initiative Organization,
and the Rome Air Development Center

View™ Summary of Commands

Database Commands

showsignal	list signal parameters such as data type, dimensions, etc.
showstatus	show system status
showdb	list all signals in database
delete	delete signal from database
copy	copy one signal to another
deletedb	delete all signals in the database
delseq	delete a sequence from the database
showseqdb	list all sequences in the database
makeseq	make a 2d signal into a sequence of 1d signals
mergeseq	make a sequence of 1d signals into a 2d signal
setorigin	set signal origin value
setinterval	set signal sample interval

Input / Output Commands

rdfile	read a signal from an external file
save	save a signal from an external file
rdseq	read a sequence from a set of external files
saveseq	save a sequence in a set of external files
rdascii	read a signal from an external ascii file
wrascii	write a signal into an external ascii file
rdsig	read a signal from a SIG format file
wrsig	write a signal to a SIG format file
rdimg	read a 512 x 512 byte signal from an IMAGINE file

Display Commands

<i>General display functions</i>	
display	display a signal (1, 2, or 3d)
magnify	display a signal magnified by pixel replication
listsig	list signal values on terminal
list2d	lists signal values on terminal in a 2d matrix
dispmin	sets the minimum display value
dispmax	sets the maximum display value
colorbar	displays the current color map
readpoints	interactively extract points from the display into a signal
showpoints	interactively list signal values from the display
text	write text into the display window
zoom	interactively zoom in and out by pixel replication
pan	interactively pan the display
surface	interactive 2d surface display
plot2d	perspective plot for 2d signals
contour	contour plot for 2d signals

relief	calculate reflectance map
<i>Window functions</i>	
createwindow	create a display window
selectwindow	set the current window for display
destroywindow	destroy a display window
showin	list window parameters
<i>Color map commands</i>	
gray	set color map to grayscale
hot	set color map to red levels
cold	set color map to blue levels
hls	set color map to HLS
spectrum	set color map to pseudocolor spectrum

Arithmetic Commands

add	add signals or signal and constant
subtract	subtract signals or signal and constant
multiply	multiply signals or signal and constant
divide	divide signals or signal by constant
logarithm	take natural log of signal
exponential	exponentiate signal
power	raise the signal to a given power
sin	calculate the sin of each sample
cos	calculate the cos of each sample
tan	calculate the tan of each sample
arctan	calculate the inverse tan of each sample
frsum	sum all frames of a sequence into a single sum frame
cmagnitude	calculate the magnitude of a complex signal
phase	calculate the phase of a complex signal
real	extract the real part of a complex signal
imaginary	extract the imaginary part of a complex signal
complex	create a complex signal given its real and imaginary parts
complexmp	create a complex signal given its magnitude and phase
conjugate	calculate the conjugate of a complex signal
absolutevalue	take the absolute value of a signal
differentiate	calculate the derivative of a 1d signal
integrate	calculate the integral of a 1d signal

Signal Edit Commands

insert	insert a point value into a signal
extract	extract a portion of a signal into another signal
overlay	overlay one signal onto another in an arbitrary position
slice	extract an arbitrary line from an image
extplane	extract a plane from a 3d signal
swaplines	invert the samples of every other line of a 2d signal

Filter Commands

median	median filter
lpbutter	low-pass Butterworth filter
hpbutter	high-pass Butterworth filter
bpbutter	band-pass Butterworth filter
brbutter	band-reject Butterworth filter
lpbessel	low-pass Bessel filter
hpbessel	high-pass Bessel filter
bpbessel	band-pass Bessel filter
brbessel	band-reject Bessel filter
dog	difference of Gaussians filter
marr	Laplacian of Gaussian filter
wallis	Wallis adaptive filter

Transform and Window Commands

dft	discrete Fourier transform
idft	inverse discrete Fourier transform
hanning	generates Hanning window in signal
hamming	generates Hamming window in signal
blackman	generates Blackman window in signal
bartlett	generates Bartlett window in signal
radon	calculate Radon transform (forward projection)
backproject	calculate backprojection
extrapolate	iterative spectral extrapolation
fraunhofer	far-field wave propagation
fresnel	near-field wave propagation

Image Enhancement Commands

threshold	zeros all points above a threshold value
clip	clips all points above a given value
laplace	calculates the Laplacian of an image
sharpen	performs unsharp mask operation on an image
enhance	interactive contrast enhancement using color mapping
smooth	moving average filter of variable size
equalize	histogram equalization for contrast enhancement
hyperbolize	histogram hyperbolization for contrast enhancement
sobel	Sobel edge detector
prewitt	Prewitt edge detector
deconvolve	constrained least squares deconvolution (macro)

Signal Manipulation Commands

sum	sums all points of a signal
convolve	convolves two signals
correlate	correlates two signals
convert	converts signal data type
min	finds minimum value in signal
max	finds maximum value in signal
resample	changes size of signal using bilinear interpolation
shift	shifts signal along coordinate axes
project	collapses 2d signal into 1d by summing along columns
expand	expands 1d signal into 2d by replicating rows
histogram	calculates the histogram of a signal
expfit	performs exponential curve fit between two 1d signals
linfit	performs linear curve fit between two 1d signals
flip	flips signal about its center
statistics	calculates mean and standard deviation of signal
ctrans	rearranges complex signal with origin at center
cinverse	inverse of ctrans
deinit	subtracts value of first sample from all samples
demean	subtracts the mean signal value from all samples
match	interactive control point matching
rotate	image rotation through an arbitrary angle

Simulation Commands

define	create an empty signal
defseq	create a sequence of empty signals
constant	put a constant value in each sample
ramp	put a linear ramp in each row
bar	put a vertical bar in a 2d signal
gauss	put a gaussian in a signal
loadsig	type in signal values

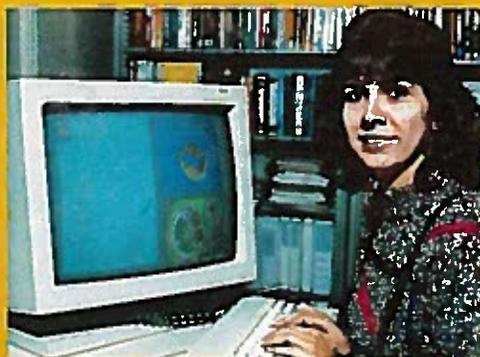
System Commands

help	list commands or information on a specific command
quit	exit the program
pause	wait for <return> – used in macros
echo	print out all macro and sequence commands
noecho	do not print macro and sequence commands
time	print the current time
menu	switch the user interface to menu mode

View™

GENERAL PURPOSE
IMAGE ANALYSIS AND
DISPLAY PROGRAM

- Available at no charge
- User friendly interface
 - Window-based
 - Menu or command driven
- On-line HELP and user manual
- Multidimensional processing operations includes:
 - Image display and enhancement
 - Pseudocolor operations
 - Point and neighborhood operations
 - Digital filtering
 - Fourier transform domain operations
 - Simulation operations
 - Database management
 - Sequence and macro processing
- Easily transportable
- Written in C (sources included)
- Handles multiple dimensions and data types
- Available on
 - VAX (VMS, Ultrix)
 - Sun (UNIX)



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