

The "reference" section of the documentation should contain a patch demonstrating how to use each of Pd's classes. As of version 0.29, a complete list of "object" classes follows. Not included in this list are messages, atoms, graphs, etc. which aren't typed into object boxes but come straight off the "add" menu.

Name	Library/Path	Category
bang	vanilla	GLUE
change	vanilla	
float	vanilla	
int	vanilla	
makefilename	vanilla	
moses	vanilla	
pack	vanilla	
print	vanilla	
receive	vanilla	
route	vanilla	
swap	vanilla	
select	vanilla	
send	vanilla	
spigot	vanilla	
symbol	vanilla	
trigger	vanilla	
unpack	vanilla	
until	vanilla	
value	vanilla	
;		
a2l any2list	flatspace zexy	
active	cyclone	
add2_comma	flatspace iemlib	
allow	flatspace maxlib	
alternate	flatspace markex	
<i>#any (Pie)</i>		
any_argument float_argument symbol_argument		
Append	cyclone	
atoi	flatspace zexy	
bpe	flatspace iemlib	
choice	vanilla/choice	
counter gem-counter	cyclone flatspace markex	
default	iemlib	
demultiplex demux	flatspace zexy	
deny	flatspace maxlib	
dist	flatspace maxlib	
dollarg	flatspace iemlib	
drip	flatspace zexy	
dsp dsp~	iemlib	
edge	flatspace maxlib	
exp_inc	flatspace iemlib	
fifo	flatspace maxlib	
fifop	flatspace zexy	
float24	flatspace iemlib	
for++	flatspace iemlib	
glue	flatspace zexy	

iem_anything	iemlib
iem_append	iemlib
iem_i_route	flatspace iemlib
iem_prepend	iemlib
iem_receive iem_r iem_send iem_s	iemlib
iem_route	flatspace iemlib
iem_sel_any	flatspace iemlib
ignore	flatspace maxlib
index	flatspace zexy
<i>init (ie)</i>	
iso	flatspace maxlib
knob	flatspace
length	flatspace zexy
lifo	flatspace maxlib
lifop	flatspace zexy
lister l	flatspace zexy
list2int l2i	flatspace zexy
list2send	flatspace iemlib
list2symbol l2s symbol2list s2l	flatspace zexy
listfifo	flatspace maxlib
listfunnel	flatspace maxlib
lpt	flatspace zexy
<i>k_receive</i>	
<i>k_send</i>	
makesymbol	flatspace zexy
match	cyclone flatspace
mergefilename	flatspace iemlib
modulo_counter	flatspace iemlib
multiselect multisel	flatspace markex
nchange	flatspace maxlib
niagara	flatspace zexy
<i>nop (zA)</i>	
nroute	flatspace maxlib
once	iemlib
oneshot	flatspace markex
packel	flatspace zexy
pique	flatspace
pre_inlet	flatspace iemlib
prepend	flatspace iemlib
<i>prepend_output (ie)</i>	
receive2list	iemlib
remote	flatspace motex
repack	flatspace zexy
sendlocal sl receivelocal rl	ggee
<i>scrolllist</i>	
serialize	cxc flatspace ggee
subst	flatspace motex
<i>segregate (zA)</i>	
slider sliderh	ggee
sort	flatspace zexy
soundfile_info	flatspace iemlib
speedlim maxlib_speedlim	cyclone iemlib
split3	iemlib
split maxlib_split	cyclone iemlib

splitfilename	flatspace iemlib
state	flatspace ggee
strcmp	flatspace zexy
stripfilename	flatspace iemlib
sync	flatspace motex
t3_bpe	flatspace iemlib
temperature	flatspace maxlib
ticker	flatspace ggee
tilt	flatspace maxlib
toddle	ggee
toggle_mess	flatspace iemlib
transf_fader	flatspace iemlib
unroute	flatspace maxlib
unsymbol	flatspace iemlib
Uzi	cyclone
kalashnikov uzi	ext13 flatspace
<i>unwonk (ge)</i>	
xerox	
bfilt	cxc flatspace
bfilt2	cxc flatspace
counter	cxc
ixprint	cxc flatspace
prepend	cxc
bangbang	cyclone
bondo	cyclone
Bucket	cyclone
buddy	cyclone
coll	cyclone
cycle	cyclone
decide	cyclone
Decode	cyclone
forward	cyclone
fromsymbol tosymbol	cyclone
funnel	cyclone
gate	cyclone iemlib
grab	cyclone
iter	cyclone
next	cyclone
onebang	cyclone
prepend	cyclone
spell	cyclone
spray	cyclone
sprintf	cyclone
substitute	cyclone
switch	cyclone
thresh	cyclone
TogEdge	cyclone
universal	cyclone
zl	cyclone
cup	ekext flatspace
listmoses	ekext flatspace
maskxor	ekext
polymap	ekext
polystat	ekext

sieve	ekext
simile	ekext flatspace
ftos	ext13 flatspace
receive13 r13 send13 s13	ext13 flatspace
strippath	ext13 flatspace
any2string string2any	flatspace iemlib
ascii->int float->ascii	hcs
bang-eater	flatspace
button	flatspace ggee
entry	flatspace
gcanvas	flatspace ggee
line3	flatspace
multiplex mux	flatspace zexy
relay	flatspace zexy
repeat	flatspace zexy
split_path	flatspace hcs
sprinkler	flatspace
detox	jasch_lib
recent	ggee
pwm	hcs
split_my_msgs	hcs
hid_one2twohid_one2threehid_one2four	hid
add2_comma	iemlib
parentdollarzero parent\$0	iemlib
prepend_ascii	iemlib
-dsp dsp01	jmmmp
f+	jmmmp
lbang	jmmmp
rec-name	jmmmp
amplitude_n	la-kitchen mapping
change_n	la-kitchen
count_n	la-kitchen
debounce mapping	la-kitchen
debounce_b	la-kitchen
last_n	la-kitchen mapping
sguigot	jmmmp
compare-any	list-abs
last-x	list-abs
list-abs	list-abs
list-apply	list-abs
list-clip	list-abs
list-compare	list-abs
list-delete	list-abs
list-drip2	list-abs
list-drip	list-abs
list-dripslow	list-abs
list-enumerate	list-abs
list-extend	list-abs
list-fifo	list-abs
list-filter	list-abs
list-find	list-abs
list-idx	list-abs
list-insert	list-abs
list-l2s	list-abs

- list-lastx
- list-len
- list-lifo
- list-makefilename
- list-map2
- list-map
- list-moses
- list-onearg
- list-reduce
- list-replace
- list-rev
- list-rot
- list-seek
- list-sieve
- list-splat
- OSCprepend
- prepent
- sroute
- take-two
- strcat
- disjoin join
- downsample
- env env+ env-
- hysteresis
- listto
- local_max local_min

list-abs
list-abs
list-abs
list-abs
list-abs
list-abs
list-abs
list-abs
list-abs
list-abs
list-abs
list-abs
list-abs
list-abs
list-abs
list-abs
list-abs
list-abs
markex
mapping
mapping
mapping
mapping
mapping

TIME

timebang	flatspace maxlib
t3_delay	flatspace iemlib
t3_metro	flatspace iemlib
t3_timer	flatspace iemlib
tripleLine	flatspace markex
urn	cyclone flatspace
velocity	flatspace maxlib
utime	cxc flatspace
linedrive	cyclone
ISOdate ISOtime	hcs
clock	jmmmp
metrum	jmmmp
stoppuhr	jmmmp
uhr	jmmmp

MATH

+ - * / pow max min	
> >= == != <= < mod div	
& << >> && %	
mtof ffrom dbtorms rmstodb dbtopow powtodb	
sin cos tan atan atan2 exp log abs sqrt pow	
random	
clip	
;	
. (z)	
1/x inv	flatspace ggee
about	flatspace mjlib
anal	cyclone
average gem-average	flatspace markex
beta bilex cauchy expo gauss linear poisson triar	flatspace maxlib
<i>cart2pol (zA)</i>	
<i>cart2sph (zA)</i>	
<i>clip (c)</i>	
db2v v2db	flatspace iemlib
dbtofad fadtodb	iemlib
<i>deg2rad (zA)</i>	
delta	flatspace maxlib
divide	flatspace maxlib
divmod	flatspace maxlib
expr	vanilla
f2note	flatspace iemlib
fadtorms rmstofad	iemlib
history	flatspace maxlib
invert	flatspace markex
limit	flatspace maxlib

mavg	flatspace zexy
<i>mean (zA)</i>	flatspace zexy
minmax	flatspace zexy
minus	flatspace maxlib
mlife	flatspace maxlib
multi	flatspace maxlib
n2m	flatspace mjlib
plus	flatspace maxlib
<i>pol2cart (zA)</i>	
<i>pol2sph (zA)</i>	
prime	flatspace zexy
<i>rad2deg (zA)</i>	
randomF randF	flatspace markex
rewrap	flatspace maxlib
<i>rmstofad (Pie)</i>	
round_zero	flatspace iemlib
<i>runden (Pm)</i>	
<i>scale (g) (mx)</i>	
shuffle	flatspace motex
<i>sph2cart (zA)</i>	
<i>sph2pol (zA)</i>	
sum	flatspace zexy
tripleRand	flatspace markex
v+ v	
wrap maxlib_wrap	flatspace iemlib maxlib
<i>wrap (z)</i>	
<i>zscale (j)</i>	
mtosr	bsaylor flatspace
ffpoly	creb flatspace
fwarp	creb flatspace
ratio	creb flatspace
accum	cyclone
acos asin atan	cyclone
capture	cyclone
Clip	cyclone
cosh sinh tanh	cyclone flatspace
drunk	cyclone
funbuff	cyclone
Histo	cyclone
maximum	cyclone
mean	cyclone
minimum	cyclone
offer	cyclone
past	cyclone
Peak	cyclone
cartopol poltocar	cyclone
Through	cyclone
range	deprecated flatspace
steady	ekext flatspace
mandelbrot	ext13 flatspace
attract1 base base3 gingerbreadman henon hopf	flatspace
autoscale	hcs mapping
pi	hcs
deg2hid hid2deg	hid

hid2rad rad2hid	hid
hid_average hid_smooth	hid
hid_centered	hid
hid_cube hid_cuberoot hid_exp hid_log hid_squa	hid
hid_graph	hid
hid_invert	hid
hid_lowpass	hid
hid_polar	hid
hid_spiral	hid
notescale	hid
autocal	la-kitchen
catch_extremum catch_extremum2	la-kitchen
fir_filter	la-kitchen
fir_hip_n fir_mean_n	la-kitchen
iir_hip iir_lop	la-kitchen
max_n min_n	la-kitchen
one_n	la-kitchen
zero_n.pd	la-kitchen
seuil_n	la-kitchen
list-accum	list-abs
list-add	list-abs
list-centroid	list-abs
list-dotprod	list-abs
list-emath	list-abs
list-equalize	list-abs
list-geometric-mean	list-abs
list-harmonic-mean	list-abs
list-inter	list-abs
list-inter-many	list-abs
list-invint	list-abs
list-math	list-abs
list-mean	list-abs
list-minmax	list-abs
list-mult	list-abs
list-normalize	list-abs
list-round	list-abs
list-sub	list-abs
list-unitvec	list-abs
triple-scale	list-abs
breakpoint breakpoint_smooth	mapping
bytemask debytemask	mapping
center_point	mapping
circular circular_seat circular_sigmoid	mapping
correlation	mapping
cubic_seat	mapping
curve_exp curve_log	mapping
curve_fade	mapping
curve_graph	mapping
curve	mapping
degrees->mapping mapping->degrees	mapping
diff_n	mapping
distance distance2d distance_n	mapping
elliptic elliptic_seat elliptic_sigmoid	mapping
exponential_curve exponential_seat exponential_mapping	

fir iir
gaussian
logistic_sigmoid

mapping
mapping
mapping

MIDI

notein ctlin pgmin bendin touchin polytouchin midiin sysexin
noteout ctout pgmout bendout touchout polytouchout midiout
makenote
stripnote

;
beat
borax
chord
gestalt
pitch
rhythm
score
Borax
flush
midiflush
midiformat midiparse
sustain
xbendin xbendin2 xbendout xbendout2
xnotein xnoteout
m-i
mk

flatspace maxlib
flatspace maxlib
flatspace maxlib
flatspace maxlib
flatspace maxlib
flatspace maxlib
flatspace maxlib
cyclone
cyclone
cyclone
cyclone
cyclone
cyclone
cyclone
cyclone
jmmmp
jmmmp

TABLES

tabread
tabread4
tabwrite
soundfiler
;
arraycopy
arraysize
envgen
pianoroll
tabdump
tabminmax

flatspace maxlib
flatspace
flatspace ggee

flatspace zexy
flatspace zexy

tabset
tabreadmix~

flatspace zexy
creb flatspace

;
VASP-HELP Hilfe hervorrufen

hid
loadbang
serial
netsend
netreceive
qlist
textfile
openpanel
savepanel
bag
poly
key keyup keyname
;

classpath
import
parazit
netclient
netdist
netrec
netserver
getenv
init ii
grid
iem_pbank_csv
mapper
msgfile
operating_system
pool
stripdir
system
vbap
wintablet
ENV
proc
comment
mousefilter
MouseState
linuxevent
linuxmouse
filesize fsize
wavinfo
beatpipe
comport

hcs

MISC

hcs
hcs
gnd
flatspace maxlib
flatspace maxlib
flatspace maxlib
flatspace maxlib
flatspace motex
flatspace iemlib

flatspace iemlib

flatspace zexy
flatspace zexy

flatspace ggee
flatspace motex
ggee

cxc flatspace
cxc flatspace
cyclone
cyclone
cyclone
deprecated flatspace
deprecated flatspace
ext13 flatspace
ext13 flatspace
flatspace
flatspace

folder_list	flatspace hcs
getdir	flatspace ggee
ifeel	flatspace hcs
image	flatspace ggee
openpatch opa	flatspace
popen	flatspace
popup	flatspace iemlib
shell	flatspace ggee
failsafe	hcs
file_type	hcs
gid->group_name group_name->gid	hcs
group	hcs
passwd	hcs
stat	hcs
uid->username username->uid	hcs
version	hcs
joystick	hid
keyboard	hid
keygate	hid mapping
mouse	hid
datei-l datei-o	jmmmp
datei-r	jmmmp
datei-w	jmmmp
pd-colors	jmmmp
gui-edit	jmmmp
oscD	jmmmp
oscS	jmmmp
tastin	jmmmp
keybang	keyboardkeys
keytoggle	keyboardkeys
keyupdown	keyboardkeys

;
[noch zu dokumentieren]
h_deque
h_list
h_map
h_multimap
h_multiset
h_priority_queue
h_queue
h_set

PD Container 0.2

h_stack
h_vector

;
matrix (z)
*mtx_** (z)
mtx_./ (z)
mtx_add, *mtx_+* (z)
mtx_check (z)
mtx_col (z)
mtx_diag (z)
mtx_diegg (z)
mtx_egg (z)
mtx_element (z)
mtx_eye (z)
mtx_inverse (z)
mtx_mean (z)
mtx_mul, *mtx_** (z)
mtx_ones (z)
mtx_pivot (z)
mtx_print (z)
mtx_resize (z)
mtx_rand (z)
mtx_roll (z)
mtx_row (z)
mtx_scroll (z)
mtx_size (z)
mtx_trace (z)
mtx_transpose (z)
mtx_zeros (z)
last_n_matrix
list2matcol

matrix

la-kitchen
la-kitchen

AUDIO GLUE

adc~ *dac~*
bang~
block~ *switch~*
catch~ *throw~*
line~
vline~
threshold~
snapshot~
vsnapshot~
samplerate~
readsf~
receive~ *send~*
writesf~
sig~

;	
blockmirror~	flatspace zexy
blockswap~	flatspace zexy
<i>cooled~</i>	
dfreq~	flatspace zexy
envrms~	flatspace zexy
fade~	flatspace iemlib
iem_blocksize~	flatspace iemlib
iem_samplerate~	flatspace iemlib
int_fract~	iemlib
Line~	cyclone
mp3play~	flatspace iemlib
pack~ unpack~	flatspace zexy
oggamp~	flatspace pdogg
oggcast~	flatspace pdogg
oggread~	flatspace pdogg
oggwrite~	flatspace pdogg
<i>ogglive~</i>	
<i>patcher~</i>	
pdf~	flatspace zexy
peakenv~	flatspace iemlib
polygate~	flatspace motex
prvu~	flatspace iemlib
pvu~	flatspace iemlib
rvu~	flatspace iemlib
<i>rlshift~ (P)</i>	
Scope~	cyclone
sfplay sfrecord	flatspace zexy
sfread~ sfwrite~	flatspace ggee
sigzero~	flatspace zexy
<i>spigot~</i>	
tavg~	flatspace zexy
t3_sig~	flatspace iemlib
t3_line~	flatspace iemlib
<i>bthresher~ (ft)</i>	
<i>thresher~ (ft)</i>	
unsig~	iemlib
<i>xgroove~ (xs)</i>	
<i>xrecord~ (xs)</i>	
<i>xplay~ (xs)</i>	
<i>zerocross~ (j)</i>	
count~	cyclone
record~	cyclone
simile~	ekext flatspace
zeroxpos~	ekext flatspace
piperead~ pipewrite~	ext13 flatspace
throw13~ t13~ catch13~ c13~	flatspace [ext13]
receive13~ send13~	flatspace [ext13]
streamin~ streamout~	flatspace ggee
blocksize_in_ms	hcs
pwm~	hcs
mat~ met~ maat~ meet~	jmmmp
snaps~	jmmmp

AUDIO MATH

+~ -- *~ /~ max~ min~	
clip~	
q8_rsqrt~	
q8_sqrt~	
wrap~	
fft~ ifft~	
rfft~ rirfft~	
framp~	
mtof~ fto~ rmstodb~ dbtorms~ rmstopow~ powtorms~	
;	
# >~, <~, ==~, &&~, ~ (z)	
abs~	cyclone flatspace markex zexy
absgn~	flatspace zexy
addl~	iemlib
amp~	hcs
atan2~	cyclone flatspace ggee
avg~	cyclone flatspace zexy
Clip~	cyclone
divl~	iemlib
exp~ log~ (ge)	
expr~ fexpr~	vanilla
ln~	flatspace motex
m2f~	flatspace iemlib
mull~	iemlib
multiline~	flatspace zexy
pol2rec~	flatspace motex
rec2pol~	flatspace motex
round~	iemlib
sgn~	flatspace zexy
sin_phase~	flatspace iemlib
subl~	iemlib
t3_sig~ (ie)	
bfft~	creb flatspace
bitsplit~	creb
blocknorm~	creb
dwt~	creb flatspace
idwt~	creb flatspace
delta~	cxc cyclone flatspace
acos~ asin~ atan~	cyclone
acosh~	cyclone
asinh~	cyclone
atanh~	cyclone
average~	cyclone

cosh~ sinh~ tanh~
 cosx~ sinx~ tanx~
 log~
 cartopol~ poltocar~
 pow~
 framescore~ framespect~
 hssc~
 mandelbrot~
 bwin~
 bmax~
 irreg~
 melf~
 mspec~
 peak~
 pspec~
 sc~
 scm~
 ss~
 trist~

cyclone
 cyclone
 cyclone
 cyclone
 cyclone
 ekext flatspace
 ekext flatspace
 ext13 flatspace
 flatspace
 flib
 flib
 flib
 flib
 flib
 flib
 flib
 flib
 flib

AUDIO OSCILLATOR

phasor~
 cos~
 osc~
 tabwrite~
 tabplay~
 tabread~
 tabread4~
 tabosc4~
 tabsend~
 tabreceive~
 ;
agogo~ (p)
bamboo~ (p)
blotar~ (p)
 bonk~
bowed~ (p)
bowedbar~ (p)
brass~ (p)
 buzz~
cabasa~ (p)
cavoc~ (ft)
cavoc27~ (ft)
chase~ (p)
clarinet~ (p)
dcblock~ (p)
 dirac~
escalator~ (p)
 fiddle~
flute~ (p)

vanilla/bonk~

flatspace zexy

vanilla

<i>formant~</i>	
<i>gq~ (p)</i>	
<i>guiro~ (p)</i>	
LFO_noise~	flatspace iemlib
loop~	extra flatspace loop~
lrshift~	flatspace lrshift~
<i>mandolin~ (p)</i>	
<i>marimba~ (p)</i>	
morse	flatspace mjlib
<i>munger~ (p)</i>	
noish~ noisi~	flatspace zexy
<i>paf~ 0.06</i>	
pink~	cyclone iemlib
<i>plucked~ (p)</i>	
<i>rechteck~ (Pm)</i>	
<i>scrub~ (p)</i>	
<i>sinesum (Pm)</i>	
<i>sleigh~ (p)</i>	
step~	flatspace zexy
susloop~	bsaylor flatspace
<i>syncgrain~</i>	
<i>vibraphone~ (p)</i>	
<i>testsig~ (Pm)</i>	
dynwav~	creb flatspace
junction~	creb flatspace
sbosc~	creb
scrollgrid1D~	creb
index~	cyclone
lookup~	cyclone
peek~	cyclone
play~	cyclone
rand~	cyclone
wave~	cyclone
ambi_rot	iem_ambi
ambi_encode ambi_decode ambi_decode3 ambi	iem_ambi
bin_ambi_reduced_decode_fft2 bin_ambi_reduced_decode	iem_bin_ambi

;	AUDIO WINDOWING
<i>hanning~</i>	
<i>hamming~</i>	
<i>blackman~</i>	
<i>connes~</i>	
<i>cosine~</i>	
<i>bartlett~</i>	
<i>welch~</i>	
<i>lanczos~</i>	
<i>gaussian~</i>	
<i>kaiser~</i>	

	AUDIO FILTERS
env~	
vcf~	
noise~	

hip~
 lop~
 bp~
 biquad~
 samphold~
 print~
 rpole~
 rzero~
 rzero_rev~
 cpole~
 czero~
 czero_rev~
 ;
 bandpass equalizer highpass highshelf hlshef lo flatspace ggee
 1p1z iemlib
 aenv~ bsaylor flatspace
 allpass~ cyclone
 ap1~ ap2~ iemlib
 bpq2~ bp2~ iemlib
 bpw2~ iemlib
 bsq2~ iemlib
 bsw2~ iemlib
 burrow~ (ft)
 centerring~ (ft)
 codepend~ (ft)
 comb~ cyclone
 complex
 compressor~
 complex-mod~ vanilla
 convol~ (Pm)
 crossx~ (ft)
 cverb~
 dentist~ (ft)
 disarrain~ (ft)
 disarray~ (ft)
 drown~ (ft)
 enveloper~ (Pm)
 ether~ (ft)
 filter~ flatspace iemlib
 filterbank~
 filtersme1~ (Pm)
 filtersme2~ (Pm)
 FIR~ flatspace iemlib
 freeverb~ freeverb
 hilbert~ vanilla
 hml_shelf~ flatspace iemlib
 hp1~ hp2~ iemlib
 hp2_but~ hp3_but~ hp4_but~ hp5_but~ hp6_t iemlib
 hp2_cheb~ hp3_cheb~ hp4_cheb~ hp5_cheb~ h iemlib
 hp2_bess~ hp3_bess~ hp4_bess~ hp5_bess~ h iemlib
 hp2_crit~ hp3_crit~ hp4_crit~ hp5_crit~ hp6_crit~ iemlib
 leaker~ (ft)
 limiter~ flatspace zexy
 lp1~ lp2~ iemlib

lp1_t~	flatspace iemlib
lp2_butt~ lp3_butt~ lp4_butt~ lp5_butt~ lp6_butt~	iemlib
lp2_cheb~ lp3_cheb~ lp4_cheb~ lp5_cheb~ lp6_	iemlib
lp2_bess~ lp3_bess~ lp4_bess~ lp5_bess~ lp6_t	iemlib
lp2_crit~ lp3_crit~ lp4_crit~ lp5_crit~ lp6_crit~ lp7	iemlib
maverage~	
mindwarp~ (ft)	
moog~	flatspace ggee
morphine~ (ft)	
multiverb~	
multyq~ (ft)	
pan~ (mo)	
pansig~	flatspace motex
para_bp2~	flatspace iemlib
pin~	flatspace mjlib
pitchnoise~	
presidency~ (ft)	
pvgrain~ (ft)	
pvharm~ (ft)	
pvoc~ (ft)	
pvtuner~ (ft)	
pvwarp~ (ft)	
reanimator~ (ft)	
resent~ (ft)	
residency~ (ft)	
scrape~ (ft)	
shapee~ (ft)	
swinger~ (ft)	
taint~ (ft)	
vacancy~ (ft)	
xsyn~ (ft)	
pvcompand~ (ft)	
quantize~	flatspace zexy
mov_avrg_kern~	flatspace iemlib
mypol2rec~ (Pm)	
myrec2pol~ (Pm)	
para_pb2~ (ie)	
rbpq2~	iemlib
rbpw2~	iemlib
recombfilter~ (Pm)	
rev1~	vanilla
rev2~	vanilla
rev3~	vanilla
schroeder~	
swap~	flatspace zexy
svf~	bsaylor cyclone flatspace
vcf_hp2~ vcf_hp4~ vcf_hp6~ vcf_hp8~	iemlib
vcf_lp2~ vcf_lp4~ vcf_lp6~ vcf_lp8~	iemlib
vcf_bp2~ vcf_bp4~ vcf_bp6~ vcf_bp8~	iemlib
vcf_rbp2~ vcf_rbp4~ vcf_rbp6~ vcf_rbp8~	iemlib
bdiag~	creb flatspace
cheby~	creb flatspace
dist~	creb flatspace
eadsr~	creb flatspace

ead~
ear~
lattice~
permut~
qmult~
qnorm~
resofilt~
xfm~
reson~
pan_gogins~
voiding_detector~
scramble~
ap1c~ ap2c~
hp1c~ hp2c~
lp1c~ lp2c~

creb flatspace
creb flatspace
creb flatspace
creb flatspace
creb flatspace
creb
creb flatspace
cxc cyclone flatspace markex
deprecated flatspace
ekext
ext13 flatspace
iemlib
iemlib
iemlib

AUDIO DELAY

delwrite~
delread~
vd~
;
blockdelay~ (Pm)
delay~
z~
fdn~

cyclone
flatspace zexy
creb flatspace

MISC~

;
matrix~ (z)
mixer~
multiplex~ mux~
demultiplex~ demux~
nop~ (zA)
vst~
impact_2modalb~
impact_modalb~

flatspace ggee
flatspace zexy
flatspace zexy

linpact_2modalb~
linpact_modalb~

SUBWINDOWS

pd
inlet outlet
inlet~ outlet~
table
;
dyn~
py

DATA TEMPLATES

drawcurve filledcurve drawpolygon filledpolygon
plot
drawnumber
struct

ACCESSING DATA

pointer
get
set
element
getsize
setsize
append
sublist
scalar

OBSOLETE

scope~ (use tabwrite~ now)
namecanvas
template (use struct now)
post_netreceive
gemorb
gemtablet

flatspace iemlib
Gem
Gem

;
accumrotate
alpha
ambient ambientRGB
camera
circle
color colorRGB
colorSquare
cone
cube
cuboid

Gem
Gem
Gem
Gem
Gem
Gem
Gem
Gem
Gem
Gem

GEM
manipulation
manipulation
manipulation

geometric
manipulation
geometric
geometric
geometric
geometric

curve	Gem	geometric
curve3d	Gem	geometric
cylinder	Gem	geometric
depth	Gem	
diffuse diffuseRGB	Gem	manipulation
disk	Gem	geometric
emission emissionRGB	Gem	manipulation
fragment_program	Gem	shader
gemhead	Gem	
gemkeyboard gemkeyname	Gem	
gemlist_info	Gem	information
gemmouse	Gem	
gemwin	Gem	
glsl_fragment	Gem	shader
glsl_program	Gem	shader
glsl_vertex	Gem	shader
hsv2rgb rgb2hsv	Gem markex	
imageVertp	Gem	geometric
light world_light	Gem	non-geometric
pix_blobtracker	Gem	pix analysis
rgb2yuv yuv2rgb	Gem	
linear_path spline_path	Gem	
model	Gem	geometric
multimodel	Gem	geometric
newWave	Gem	geometric
ortho	Gem	manipulation
part_color	Gem	particle system
part_damp	Gem	particle system
part_draw	Gem	particle system
part_follow	Gem	particle system
part_gravity	Gem	particle system
part_head	Gem	particle system
part_info	Gem	particle system
part_killold	Gem	particle system
part_killslow	Gem	particle system
part_orbitpoint	Gem	particle system
part_render	Gem	particle system
part_sink	Gem	particle system
part_size	Gem	particle system
part_source	Gem	particle system
part_targetcolor	Gem	particle system
part_targetsize	Gem	particle system
part_velcone	Gem	particle system
part_velocity	Gem	particle system
part_velsphere	Gem	particle system
part_vertex	Gem	particle system
pix_2grey	Gem	pix
pix_a_2grey	Gem	pix
pix_add	Gem	pix image
pix_aging	Gem	pix
pix_alpha	Gem	pix
pix_background	Gem	pix
pix_backlight	Gem	pix
pix_biquad pix_movement pix_tIIR	Gem	pix timebased effect

pix_bitmask	Gem	pix
pix_blob	Gem	pix
pix_blur	Gem	pix
pix_buffer	Gem	pix
pix_buffer_read pix_buffer_write	Gem	pix
pix_buf	Gem	pix
pix_chroma_key	Gem	pix mix
pix_clearblock	Gem	pix
pix_coloralpha	Gem	pix
pix_colormatrix	Gem	pix
pix_color	Gem	pix
pix_colorreduce	Gem	pix
pix_compare	Gem	pix
pix_composite	Gem	pix mix
pix_contrast	Gem	pix
pix_convert	Gem	pix
pix_convolve	Gem	pix
pix_coordinate	Gem	pix
pix_crop	Gem	pix
pix_curve	Gem	pix
pix_data	Gem	pix
pix_deinterlace	Gem	pix
pix_delay	Gem	pix timebased effect
pix_diff	Gem	pix mix
pix_dot	Gem	pix
pix_draw	Gem	pix
pix_dump	Gem	pix
pix_duotone	Gem	pix
pix_fiducialtrack	Gem	pix analysis
pix_film	Gem	pix source
pix_flip	Gem	pix
pix_freeframe	Gem	pix
pix_gain	Gem	pix
pix_grey	Gem	pix
pix_halftone	Gem	pix fx
pix_histo	Gem	pix
pix_hsv2rgb pix_rgb2hsv	Gem	pix
pix_imageInPlace	Gem	pix source
pix_image	Gem	pix source
pix_indycam	Gem	pix
pix_info	Gem	pix
pix_invert	Gem	pix
pix_kaleidoscope	Gem	pix
pix_levels	Gem	pix
pix_lumaoffset	Gem	pix
pix_mask	Gem	pix mix
pix_mean_color	Gem	pix
pix_metaimage	Gem	pix
pix_mix	Gem	pix
pix_motionblur	Gem	pix timebased effect
pix_movement2	Gem	pix timebased effect
pix_movie	Gem	pix source
pix_multiblob	Gem	pix analysis
pix_multiimage	Gem	pix source

pix_multiply	Gem	pix mix
pix_normalize	Gem	pix
pix_offset	Gem	pix
pix_pix2sig~ pix_sig2pix~	Gem	pix
pix_posterize	Gem	pix
pix_puzzle	Gem	pix
pix_rds	Gem	pix
pix_record	Gem	pix output
pix_rectangle	Gem	pix
pix_refraction	Gem	pix
pix_resize	Gem	pix
pix_rgba	Gem	pix
pix_roll	Gem	pix
pix_rtx	Gem	pix timebased effect
pix_scanline	Gem	pix
pix_set	Gem	pix
pix_share_read pix_share_write	Gem	pix
pix_snap2tex	Gem	pix
pix_snap	Gem	pix
pix_subtract	Gem	pix mix
pix_takealpha	Gem	pix mix
pix_texture	Gem	pix
pix_threshold_bernsen	Gem	pix
pix_threshold	Gem	pix
pix_videoDS	Gem	pix source
pix_video	Gem	pix source
pix_write	Gem	pix
pix_yuv	Gem	pix
pix_zoom	Gem	pix
polygon	Gem	geometric
polygon_smooth	Gem	manipulation
pqtorusknots	Gem	geometric
primTri	Gem	geometric
rectangle	Gem	geometric
render_trigger	Gem	control
ripple rubber	Gem	geometric
rotate rotateXYZ	Gem	manipulation
scale scaleXYZ	Gem	manipulation
scopeXYZ~	Gem	geometric DSP
separator	Gem	manipulation
shearXY shearXZ shearYX shearYZ shearZX shea	Gem	manipulation
shininess	Gem	manipulation
slideSquares	Gem	geometric
specular specularRGB	Gem	manipulation
sphere	Gem	geometric
spot_light	Gem	non-geometric
square	Gem	geometric
teapot	Gem	geometric
text2d text3d textextruded textoutline	Gem	geometric
torus	Gem	geometric
translate translateXYZ	Gem	manipulation
triangle	Gem	geometric
tube	Gem	geometric
vertex_program	Gem	shader

;
pdp_affine
pdp_agc
pdp_blur_hor
pdp_blur
pdp_blur_ver
pdp_cheby3o
pdp_contrast
pdp_conv_alledge
pdp_conv_emboss
pdp_conv_smooth
pdp_conv_sobel_edge
pdp_conv_sobel_hor
pdp_conv_sobel_ver
pdp_diff
pdp_dither
pdp_gain3
pdp_gradient
pdp_grey
pdp_invert
pdp_m_inverse
pdp_motion_blur
pdp_motion_fade
pdp_motion_phase
pdp_offset
pdp
pdp_phase_hor
pdp_phase
pdp_phase_ver
pdp_png_to
pdp_pps
pdp_qt_control
pdp_qtloop2~
pdp_qtloop~
pdp_saturation
pdp_save_png_sequence
pdp_sub
pdp_tag
pdp_xv_keycursor

PDP

;
pidip
boids2d boids3d

ANDERE

boids


```

;
iAmbient2D iAmbient3D          flatspace
iCircle2D iCircle3D            flatspace
iCylinder3D                     flatspace
iLine2D                         flatspace
iPlane3D                       flatspace
iSeg2D                         flatspace
iSphere3D                      flatspace
link link2D link3D             flatspace
mass mass2D mass3D            flatspace
tCircle2D tCircle3D tCube3D tCylinder3D tLine2D flatspace
tLink2D tLink3D               flatspace
tPlane3D                      flatspace
tSphere3D                     flatspace

```

PHYSICAL MODELLING

LEGENDA

```

;
(ft)
(j)
(mx)
(mj)
(mo)
PD Container 0.2
(p)
vasp_modular 0.1.3
(xs)
(z)
(zA)

(P$)
(P)
(Phc)
(Pm)
(Pie)

```

Function

send „bang“ message
eliminate redundancy in a number stream
store a floating point number
store an integer
format a string with a variable field
part a stream of numbers
combine several atoms into one message
print messages to the terminal window
receive messages without patch cords
route messages according to their first element
swap two numbers, respecting right-to-left order
compare numbers or symbols
send messages without patch cords
pass or block messages
store a symbol
sequence messages in right-to-left order and convert data
split a message into atoms
looping mechanism
nonlocal shared value (named variable)

convert "anythings" to "lists"
report if window is active / inactive
add a comma after a message
lets only "allowed" floats or symbols through
alternate between two outlets
store and recall any message (like f, or symbol)
initiate internals
append a list to the incoming list
convert ASCII to integer
break point envelope
search for a best match to an incoming list
counts the number of bangs received
replace initial argument, if it is zero
demultiplex the input to the specified output
blocks "denied" floats or symbols
send data to a list of receive objects
receive parent initial arguments <list>, like a \$n
unfolds a package to a sequence
control audio, measure dsp load
detect rising or falling edge in floats
linear and/or exponential increment counter, bang controlled
first in first out buffer for floats
first in first out stack with priorities
concatenate a list of float-fragment-strings to a 23 bit accurate mantissa
incremental counter (triggered by internal metro)
glue together 2 packates (append, prepend, ...)

latch for anything
append a message to any messages
variation of route (abbr. iiroute) ???
prepend a message to any messages
receive object with changeable receive label
improvement of route
control a message-box with multiple content
lets information through only when it was present at input longer than N ms
create a symbol->int map
initialize a message via loadbang (abbr. ii)
queues up lists of pitches and attack points

get the length of a list
last in first out buffer for floats
last-in-first-out stack with priorities
stores a list
cast all floats of a list to integers
convert some kind of lists to a sent message
convert a list <-> symbol
first in first out buffer for lists
send values out as list with source index
write data to the parallel port

concatenate lists to formatted symbols
look for a series of numbers and output as a list
merge a list of symbols and floats to a symbol
increments counter-number from 0 to max-1 by a bang
select object which accepts a list in the right inlet
a "new" [change] ???
divide a package into 2 subpackages
no operation
route if Nth element is matched
only the first message passes through
blocks after initial bang
get the nth element of a package
find peaks in an FFT spectrum
before an incoming message be released to an outlet, a message of 2 items will be sent
list prefixer
an identifier message and then the incoming message
convert received message to a list
send data to any receive object
(re)pack atoms to packages of a given size
send messages locally per canvas ???
displays and scrolls a text in a patch window
turn a stream of floats into a list
self-similar substitution/diminution of rows
segregate the input to various outlets, depending on the type
slider from ggee
shell-sort a list of floats
show the header data of a wav file
speed limit for incoming messages
part a numeric stream into 3 ways
look for a range of numbers

split into path and filename
 saves settings in a patch to a file ???
 compare 2 lists as if they were strings
 strip the first or last characters of a symbol
 extended trigger object based on sync from jMax
 time-tagged trigger break point envelope
 output number of input changes in N ms
 toggle from ggee
 measure "tilt" of input
 bang that routes messages through
 control a message-box with multiple content (abbr. tm) ???
 transforms a slider range
 merges all inputs into one output and prepend an identifier
 convert a symbol to a anything selector
 send a specified number of bangs as fast as possible
 send a specified number of bangs as fast as possible
 unpack which sends unused symbols to the last outlet

modulo + select 0
 bang filter
 counter -> NV
 print without identifier
 list prefixer -> NV
 send a number of bangs in order
 synx a group of messages
 pass numbers from outlet to outlet
 sync incoming data, output when all inlets received data
 store and edit collections of messages
 send data to individual outlets
 output 1/0 randomly
 sent out 1/0 to a specific outlet
 send remote messages
 transform symbol to numbers or messages and vice versa
 tag data based on the inlet it arrived in
 send data out the specified output
 intercept the output of another object
 split a list into a series of numbers
 try to separate messages into logical parts
 traffic control for bang messages
 prepend a message with another message
 convert input to ascii values
 distribute an integer to a numbered outlet
 format a message of strings and numbers
 substitute a symbol for another symbol in a message
 output a message from a specific inlet
 combine numbers into a list that are received close together
 report zero / nonzero transitions
 send a message to all instances of the same class in this patch (and subpatches if desired)
 multi purpose list processing object
 counts up
 splits two lists according to the values contained within the 1st list
 exclusive-OR mask map
 two-dimensional polyphony-restricted map
 outputs statistics about voice usage

takes integers and maps them to floats
compare two numbers according to an error window
float to symbol
like r and s, with set messages
strip a path from a filename
converts ASCII strings to pd messages
convert a stream of ASCII digits to a single value
eat N bangs in every M bangs
a bang with a label
text entry box
click and drag to get pixel values
line with 3rd order polynome
multiplex the selected inlet to the outlet
relay messages according to their first element
repeat a message several times
like splitfilename
dynamic control message dissemination
extract values, contents, attributes from xml-tag structures
output only most „recent“ messages
pulse width modulation at message rate
split a stream of messages
one-to-x mapping object
add a comma after a message
receives the parent \$0 symbol
prepends a message + selector symbol
DSP switch
counter with variable increment
loadbang which can be triggered more often
automatic naming for a record / playback machine
return the amplitude covered by the last n values
returns 0 if the last n datas are the same
counts from 0 to n-1
blocks the value of incoming data for the further n samples after each change
blocks the input until a specified duration is over
save the n last incoming datas into a list
spigot with GUI
test if two anythings are the same
make a list of the last x floats
apply abs() on floats of a list
apply the object created by [arg1 arg2] on every list element
clip for lists
compare two lists element by element
delete element at a position
drips two lists in sync (as long as 1st list lasts)
drips or serializes a list
serialize a list on demand
serialize a list and put numbers in front of each element
build a list from incoming lists and output stored list
first in, first out
returns a sequence of items for which the adjusted operation is true
find positions of a value in a list
get element at position idx
insert LIST before ELEMENT at position POS in original list
concatenate a list into a single symbol

- make a list of the last x floats
- calculate length of a list
- last in, first out
- change symbols in a list, floats pass unchanged
- map an operation on element pairs from two lists
- swiss army knife of list operations
- like moses for lists
- list with optional argument
- list goes element per element through a user-defined operation
- replace (overwrite) a list from position POS with a new list
- reverse a list's order
- rotate a list
- walk through a list element by element
- look up occurrence of incoming floats in a list
- advanced list-split with negative indexes
- prepends first argument to an OSC message list
- shortcut for [list prepend]-[list trim]
- settable route
- print all combinations of length 2 without repetition
- prepends its text to any symbol that is sent to it
- split / join a range into two (0-1)
- output 1 over n data
- normal / positive / negative envelope follower
- add hysteresis to input data
- separate a list into a stream of atoms
- give the value of every local maximum / minimum whenever there is a change in direction

- bang after time delay
- send „bang“ periodically ala metronome
- ramp generator
- measure logical time
- measure CPU time
- ask operating system for elapsed real time
- delay a message – a message „delay line“

- calculate meanvalue of times between clicks
- show (simple) clock
- get system date
- controls a list of bang
- timeconvert (Pm)
- allows complex timing bangs to be delivered
- basic rhythm pattern building blocks that allows polyrhythms to be generated quickly and easily
- weighted series of random numbers
- a better metro
- output sequence of numbers (similar to "line")
- get system time

events sch 0.2
shows conversion of hertz, milliseconds, bpm, ...

send out bangs at given times of day
time tagged trigger delay
time tagged trigger metronom
time tagged trigger timer
line object for 3 values
rng without duplicate numbers
get velocity of digits per second
output seconds since epoch and microsecond fraction
scale numbers exponentially to use with line~
output current date / time in ISO format
chronometer with display in secs
metro with GUI
chronometer with 2 layers
shows the time

arithmetic
relational operators
bit twiddling
convert acoustical units
higher math
pseudorandom integer generator
force a number into a range

scalar multiplication of vectors (=lists of floats)
takes the inverse of the input
delivers a number that is "about" the same as the input number
generates a histogram of number pairs received
average together a series of numbers
random numbers distribution
convert cartesian coordinates to polar
convert cartesian coordinates to spheric

db to rms conversion
convert midi-db to fader scale
convert degree to radiant
calculate 1st or 2nd order difference
like "/" but calculates result when second inlet is changed
calculates division and modulo
expression evaluation
converts frequency to notes + cents
fader scale to rms
calculates the average of the items (floats) that came in within the last N milliseconds
non-zero numbers to 0, 0 to 1
limits input to lie between boundaries

moving average filter
get the mean value of a list of floats
get minimum and maximum of a list of floats
like "-" but calculates result when leftmost or second inlet is changed
cellular automata object
like "*" but calculates result when leftmost or second inlet is changed
note to midi
like "+" but calculates result when leftmost or second inlet is changed
convert polar coordinates to cartesian
convert polar coordinates to spheric
prime number detector
convert radiant to degree
floating point random number
wraps floats back and forth into a range
rms to fader
round numbers near zero to zero
set numbers behind the comma
scale input from a certain input range to lie between output boundaries
no-repeat random number generator
convert spheric coordinates to cartesian
convert spheric coordinates to polar
sum the elements of a list
three random numbers
 $v \cdot v / (g)$
wraparound
wrap the float
scale von pdjimmies
converts MIDI note value to samplerate
finite field polynomial
tangent warp frequency
multiply by 2^k so result is $1 \leq r < 2$ (transposer)
store, add to, and multiply a number
arc functions
store and edit numbers
limit numbers to a range
hyperbolic functions
output random numbers in a moving range
store x,y pairs of numbers together
generates a histogram of the received numbers
output the greatest in a list of numbers
find the running average of a stream of numbers
output the smallest in a list of numbers
store x, y pairs of values (x is int only)
report when the input decreases beyond a certain number
output only numbers greater than the previous
cartesian to polar conversion
output only numbers smaller than the previous
like [scale]
takes stream of numbers, outputs max, min, through
 $z = z * z + c$
attractors
scales a stream of numbers with dynamic input range
value of pi as accurate as Pd can manage
conversion [hid]-range to degrees

conversion [hid]-range to radians
smooths a stream of numbers through weighted averaging
convert 0-1 to -1-1
maps the input range to the chosen curve
draw an arbitrary curve, which is applied to the input range
inverts the stream of numbers
smooths a stream of numbers through audio conversion + lowpass filtering
converts cartesian to polar coordinates
converts cartesian to spiral in polar coordinates
scales a stream of numbers to MIDI note numbers
autocalibrating scaler (for sensors)
return the last locals minimum and maximum values
fir filter with coefficient list
fir high / low-pass filter with order n
iir high / low-pass filter
return the maximum / minimum from the last n values
returns 1 if the last n datas were non-zeros
returns 1 if the last n datas were 0
returns 1 if the difference between the current sample and the sample n before is up to the threshold v
add all floats in a list
add two lists element by element
calculates the centroid of a mass of a float-list
dot-product of two float-lists
do math on float-lists element by element
scale a float-list so that all float elements sum up to 1
calculate the geometric mean of a float-list
calculate the harmonic mean of a float-list
elementwise linear interpolation between two float-lists
elementwise linear interpolation between several internally-stored float-lists
inverse intervals of a float-list
simple mathematical operations on lists
calculates the arithmetical mean of a float-list
find minimum and maximum in a float-list
multiply two float-lists
normalizes a float-list
round all numbers in a float-list to a nearest multiple
subtract two float-lists element by element
normalize a float-list geometrically
interpolate linearly between two points
curves the input range with a double-linear interpolator with 2 control parameters
generate / decode a bitmask byte from 8 inlets
convert 0-1 data into a center point with two 0-1 ranges
curves the input range with a double-circular seat with 1 control parameter
correlation of 2 different streams
curves the input range with cubic curves
maps the input range to an exponential / logarithmic curve
3rd order polygone for natural fade
maps the input range to an arbitrary curve
curves the input range
converts mapping – degrees
differentiate the input
distance from a point and a stream (normal, 2d, Nd)
curves the input range with 2 ellipses
curves the input range with a double-exponential seat

filters
generate gaussian curve
curves the input range with a double-exponential seat

MIDI input
MIDI output
send note-on messages and schedule note-off for later
take note-off messages out of a MIDI stream

beat tracker
analyse incoming midi notes
tries to detect chords
gestalt detection for monophonic melodies
get info about pitch
detects the beat of rhythmic patterns
score follower that tries to match incoming MIDI data to a score store ???
reports current info on note on/off
provide note offs for held notes
send note offs for all hanging notes in a raw midi state
de/construct midi messages
hold note offs and output them on request
extra precision midi pitchbend objects (14 bit)
interpret midi messages with release velocity
automatic conversion of MIDI controller
fast visual control of MIDI inputs

read numbers from a table
read numbers from a table with 4-point interpolation
write numbers to a table
read and write soundfiles to arrays

copy data from one array to another
returns the size of an array
envelope generator
graphical sequencer controller 0.3
dump the contents of a table as a list
get minimum and maximum of a table

set a table with a list of floats
overlap add tabread clone

vasp_modular

HID protocol reader
send „bang“ automatically when patch loads
serial device control for NT only
send Pd messages over a network
listen for incoming messages from network
text-based sequencer
read and write textfiles
query you for a filename
query you for the name of a file to create
collection of numbers
MIDI-style polyphonic voice allocator
grab keyboard

???

returns each path in the global classpath
loads libraries from the path to local namespace

simple client that connects to netserver or to pd's native netreceive object
distribute data to several netreceive
?report of netsend connections?
netclient
sends value of an environment variable argument on bang
initialize anything by loadbang

parameter-bank with csv-syntax

read and write messages into text files
get the current OS
a hierarchical storage
strips all leading directories from a path
send a system message to the console
vector based amplitude panning external
external for using Wacom tablets on Windows
get and set environment variables
interface to the linux proc filesystem
text comment with some formatting options, meant to be Max/MSP compatible
passes numbers only when mousebutton is up
report mouse x/y/deltax/y and buttonpress
outputs raw events from the linux event system
takes events directly from a linux event device
gives size of a file
get samples, channels, bitspersample, amplerate of a file
event scheduler / quantizer
serial port interface

listing of files based on a wildcard pattern
get the directory this patch is operating in
control the pulse of an iFeel mouse
incorporate images
open a patch file
shell commands
popup menu
run commands in a UNIX shell
turns off dsp and / or quits pd
find the file type of a file
convert group name <-> GID
fetch password data based on a UID or group name
fetch password data based on a UID or username
gets information about files
convert group name <-> GID
version of the currently running Pd
use a joystick device with Pd
use a keyboard device with Pd
simple keyboard-controlled gate
use a mouse device with Pd
send the message „open ...“
send the message „read ...“
send the message „write ...“
Tcl/Tk and data structure's color palettes
GUI-editor abstraction
counts received OSC messages
interface for [sendOSC]
gate for keyboard input
key bang GUI
key toggle GUI
increase/decrease of any value GUI

create/store/... matrices
 multiply 2 matrices element by element
 divide 2 matrices element by element
 add 2 matrices (or an offset to 1 matrix)
 check the consistency of a matrix and repair
 set columns of a matrix
 get the diagonal of a matrix
 diagonal matrix (from upper right to low left)
 identity matrix (from upper right to low left)
 set elements of a matrix
 identity matrix
 get the inverse of a matrix
 get the mean value of each column
 multiply 2 matrices (or a factor with 1 matrix)
 matrix with all elements==1
 pivot transform a matrix
 print a matrix to the stderr
 resize a matrix (evtl. with zero padding)
 matrix with random elements
 column shift a matrix
 set rows of a matrix
 row shift a matrix
 get the size of a matrix
 get the trace of a matrix
 transpose a matrix
 matrix with all elements==0
 save the last n incoming datas into a colon matrix
 converts a list into a colon matrix

audio input/output
 output bang after each DSP cycle
 block size and on/off control for DSP
 summing signal bus and non-local connection
 audio ramp generator
 high-precision audio ramp generator
 trigger from audio signal
 convert a signal to a number on demand
 deluxe snapshot~ ???
 get the sample rate
 read a soundfile VERWENDEN
 one-to-many nonlocal signal connections
 write audio signals to a soundfile VERWENDEN
 convert numbers to audio signal

play back a signal-vector in a time-reversed way
swap the upper and lower half of a signal-vector
sound editor 0.11
frequency detector that counts zero-crossings
like env~, but outputting rms instead of dB
fade-in fade-out shaper (need line~)
current blocksize of a window
samplerate of a window in Hertz
split signal float to integer and fractal part
line~ with lists and bang in the end
mpeg layer III player
convert signals to float-packages
streaming client
stream to IceCast2 or JRoar
file player
stream to file

16x16 patchbay inspired by Synthi AKS 0.3
probability density function
signal-peak-envelope
switch between multiple signal inputs
peak- rms- vu-meter
peak- vu-meter
rms- vu-meter
shift signal vector elements left or right

play back/record (multichannel) soundfiles <- NICHT VERWENDEN
NICHT VERWENDEN
detects whether there is signal or not
signal router 0.11
arithmetic mean of a signal between two bangs
time tagged trigger sig~
time tagged trigger line~
similar to thresh~ but with more control
an amplitude/frequency sensitive gating object
signal to float converter

noise detector, counts zero crossings of signal
sample counter
read and write sample values
compare two signals according to an error window
find n-th zero crossing in frame
like sfread and write, but non-blocking
like catch~ and throw~, with set messages
like r and s, with set messages
streaming client
blocksize in ms
pulse width modulation at audio rate
mono/stereo level meter with amplitude control
snapshot~ GUI implementation

operators on audio signals
restrict a signal to lie between two limits
signal reciprocal square root
signal square root
remainder modulo 1
forward and inverse complex FFT
forward and inverse real FFT
estimate frequency and amplitude of FFT components
conversions for audio signals

logical operators
absolute value of a signal
absolute value + signum
signal addition with line~
smooth amplitude control
get the phase from a imaginary value of the fft
arithmetic mean of 1 signal-vector
limit numbers to a range
signal division with line~
signal math
expression evaluation
log~
convert MIDI pitch to frequency (obsolete)
signal multiplication with line~
line~d multiplication of multiple signals
inverse of rec2pol~
convert rectangular coordinates to polar
round signal float to nearest integer
signum of a signal
calculate phase difference between 2 sine-waves, in samples
signal subtraction with line~
convert numbers to signal with sample accuracy
reordered fft
convert signal to binary vector
normalize a (set of) dsp block(s) (i.e. for spectral processing)
discrete wavelet transform
discrete inverse wavelet transform
difference between this and last sample
arc functions

hyperbolic functions

cartesian to polar conversion

calculates weighted similarity value for 2 signal vectors

highest significant spectral component

$z = z * z + c$

multiplies a signal block with a window

gives block max

irregularity

creates a mel spaced filterbank to generate mel frequency cepstral coefficients

get amplitude or power spectrum from fft

get spectral peaks from magnitudes / estimate frequency

get phase spectrum from fft

spectral centroid

spectral flatness measure

spectral smoothness

tristimulus x, y, z

IS AND TABLES

sawtooth generator

cosine waveshaper

cosine wave oscillator

write a signal in an array

play a table as a sample (non-transposing) transposing)

table lookup

4-point interpolating table lookup

4-point interpolating table oscillator

writes one block of a signal continuously to an array

read a block of signal from an array continuously

attack detector for small percussion instruments

subtractive synthesis without filters

an 8

rule cellular automata that generates spectra

a 27

rule cellular automata object

uses a sync signal to determine who gets out which outlet

blocks DC components in audio signals

produces a unit:sample:sequence

pitch estimator and sinusoidal peak finder

formant synthesis
equalizer with variable number of filter banks

2-point-interpolated time-stretched white noise
phase generator for looping samples
shift signal vector elements left or right

convert text to morse code
granular sampling instrument
draws a random number every n samples and interpolates between

pink noise (-3dB per octave)

a squarewave generator

examples of sinesum
sleigh bell
unit:step sequence or a rectangle>window
another phase generator for sample looping
implements synchronous granular synthesis

choose noise, osc, phasor by clicking
dynamic wavetable: use a signal block as wavetable
circulant lossless signal junction
smallband oscillator (i.e. for formant synthesis)
a stabilized scroll grid chaotic oscillator
sample playback without interpolation
transfer function lookup table
read and write sample values
position based sample playback
bandlimited random noise
variable size wavetable
ambisonic rotation
ambisonic encoding / decoding
ambisonic binaural encoding / decoding

envelope follower
voltage-controlled bandpass filter
uniformly distributed white noise

one-pole high pass filter
 one-pole low pass filter
 bandpass filter
 2-pole-2-zero filter
 sample and hold unit
 print out raw values of a signal
 real one-pole (recursive) filter, raw
 real one-zero (non-recursive) filter, raw
 real one-zero (non-recursive) „reverse“ filter, raw
 complex one-pole (recursive) filter, raw
 complex one-zero (non-recursive) filter, raw
 complex one-zero (non-recursive) „reverse“ filter, raw

coefficients for biquad~
 control IIR filter 1. order
 asymptotic ADSR envelope generator
 allpass filter
 allpass 1. / 2. order
 bandpass 2.order with Q inlet
 bandpass 2.order with bandwidth inlet
 bandstop 2.order (notch) with Q inlet
 bandstop 2.order (notch) with bandwidth inlet
 a cross referenced filtering object
 a spectral modulation object
 a classic block convolution object
 comb filter
 mod~ (P) frequency shifter
 audio compressor 0.1
 frequency shifter
 convobrosfilter
 a cross synthesis object with gating
 implementation of the Csound reverb
 a partial knockout object
 an interpolating version of disarray~
 a spectral redistribution object
 a noise reduction (or increase) object
 the (old???) envelope generator of iemlib
 another spectral compositing object
 multiple object for all useful IIR-filters 1. and 2. order like lowpass, highpass, bandpass, bandstop, allpass
 outputs the frequency response against a set pass filters 0.1
 a hard filtering of low(soft) frequencies
 filtering by drawing with mouse in array
 convolve a signal with an array
 Schroeder/Moorer reverb model 0.2c
 phase quadrature of input for complex modulation
 high-mid-low-shelving filter
 highpass 1. / 2. order
 highpass 2.3.4.5.6.7.8.9.10.order with butterworth characteristic
 highpass 2.3.4.5.6.7.8.9.10.order with chebyshev characteristic
 highpass 2.3.4.5.6.7.8.9.10.order withessel characteristic
 highpass 2.3.4.5.6.7.8.9.10.order with critical damping
 a sieve based cross fader
 a limiter/compressor module
 lowpass 1. / 2. order

lowpass 1.order with time_constant inlet
 lowpass 2.3.4.5.6.7.8.9.10.order with butterworth characteristic
 lowpass 2.3.4.5.6.7.8.9.10.order with chebyshev characteristic
 lowpass 2.3.4.5.6.7.8.9.10.order with bessel characteristic
 lowpass 2.3.4.5.6.7.8.9.10.order with critical damping
 moving average filter with IIR
 a spectral formant warping object
 signal controlled "moog" resonant lowpass
 a morphing object
 Schroeder/Moorer reverb model
 a four band filter
 equal power stereo panning
 same as above but takes a signal modulator rather than a float
 parametril bandpass 2. order
 randomly delivers the input signal to either the right or left outlet with a given probability
 Harmonic/inharmonic monophonic timbre separator
 a spectral sampler with pitch control
 a spectrum analyzer for granular resynthesis
 a harmonizer
 an additive synthesis phase vocoder
 a spectrum quantizer for tuning to arbitrary scales
 a non linear frequency warper
 an audio texture mapper
 similar to residency~ but with independent bin control
 a spectral sampler useful for time scaling
 a noise reduction (or increase) object with frequency control
 a frequency shaping object
 a phase swapping object
 a cross synthesis object
 a spectral compositing object
 a cross synthesis with compression object
 a spectral compressor/expander object
 quantize a signal with a variable step-number
 moving average filter kernel
 fft stuff, needed as abstraction for some other patches
 fft stuff, as above (ggee)
 parametrical bandpass ???
 resonance bandpass 2.order with Q inlet
 resonance bandpass 2.order with bandwidth inlet
 rough combfilter feedback
 series of allpass with exponentially growing delay lines
 simple 1-in, 4-out reverberator
 hard-core, 2-in, 4-out reverberator
 schroeder reverb
 byte-swap a 16bit signal
 state-variable filter
 highpass 2.4.6.8.order with freq and Q signal inlets
 lowpass 2.4.6.8.order with freq and Q signal inlets
 bandpass 2.4.6.8.order with freq and Q signal inlets
 resonance bandpass 2.4.6.8.order with freq and Q signal inlets
 block diagonal state space system (spectral processor)
 chebyshev polynomial waveshaper
 dist~ waveshaper
 exp. attack decay sustain release

exp. attack decay
exp. attack release
lattice~ filter
random permute a signal block
multiply 2 quaternion signals
normalize a quaternion signal (or any 4 channel sig)
a reso filter (4pole, 3pole)
coupled frequency modulation
interpolating reson filter
modification of pan~
estimates whether a frame of speech is voiced or unvoiced
big fun with spoken words or beats
allpass 1. / 2. order for filter cascades
highpass 1. / 2. order for filter cascades
lowpass 1. / 2. order for filter cascades

writes a signal in a delay line
read a signal from a delay line
reads a signal from a delay line at a variable delay time (4-point-interpolation)

high resolution delay for smaller delay times
delay incoming signal for a number of samples
samplewise delay
feedback delay network

matrix multiply m signals to r signals
beginning of a dynamic matrix object
multiplex 1-of-n signals to 1 outlet
demultiplex 1 inlet to 1-of-n outlets
no operation

define a subwindow
control inlet / outlet
audio inlet / outlet
array of numbers

dynamic object mangement	0.1.1
python script objects	0.2.0

draw shapes for data structures
draw array elements of scalars
draw numeric fields for data structures
declare the fields in a data structure

remember the location of a scalar in a list
get values from a scalar
set values in a scalar
get pointer to an element of an array
get the number of elements of an array
resize an array
add item to a list
get a list from a field of a scalar
draw a scalar on parent

???

???

attach this canvas to a name

convert message lists with a prepended float index
respond to events of a SpaceOrb
respond to events of a graph-tablet

accumulated rotation
enable alpha blending
ambient coloring

renders a circle
colouring
renders a square with several colors
renders a cone
renders a cone
renders a cuboid box

renders a bezier-curve
renders a 3d bezier-curve
renders a cylinder
turn on / off depth test
diffuse colouring
renders a disk
emission colouring
load and apply an ARB fragment shader
connect gem objects to the window manager
keyboard events in the gem window
get current transformation of a gemlist
mouse events in the gem window
access to the window manager
load a GLSL fragment shader
link GLSL-modules into a shader program
load a GLSL vertex shader
convert between RGB and HSV colorspace
map luminance to height
adds a point-light to the scene
blob detector and tracker
convert between RGB and YUV colorspace
reads out a table
renders an Alias/Wavefront-Model
load multiple an Alias/Wavefront-Model and renders one of them
renders a waving square (mass-spring-system)
orthographic rendering
defines color of particles
change velocity of particles
draw a particle system
particle follow each other
sets the gravity-vector of the particle system
starts a particle system
gives all available information of all the particles in the system
kill all particles which are older than the kill time
kill all particles which are slower than the kill speed
make the particles orbit about the position x,y,z
draw a particle system
sets up a sink for the particles within the system
change size of the particles
add a particle source
change the color of the particles
change the size of the particles
sets a cone to be the velocity-domain of new particles
sets velocity of new particles
sets a sphere to be the velocity-domain of new particles
add a particle at the specified outset
converts a pix to greyscale
converts a pix to greyscale based on alpha
add 2 images
apply a super8-like aging effect
set the alpha values of an RGBA-pix
separate an object from a background
blacklighting effect
timebased IIR filter

mask out pixels
get the „center of gravity“ of an image
deprecated, use pix_motionblur
storage place for a number of images
read / write images to a pix_buffer
buffer a pix
mix 2 images based on their color
clear an image without destroying the picture
calculate the alpha-channels from the RGB data
transform the pixel values by a matrix
set the color-channels of an image
reduce the number of color in the image
mix 2 images based on their luminance
alpha-blend 2 images
change contrast and saturation of an image
convert the colorspace of an image
apply a convolution kernel
set the texture coordinates for a pix
get a subimage of an image
apply color curves to an image
get pixel data from an image
deinterlace an image
delay a series of images
get the difference between 2 pixes
make dotty images
draw pixels on the screen
dump all the pixel data of an image
reduce the number of colors by thresholding
fiducial [target] detector and tracker
load in a movie file
flips the image along an axis
run a FreeFrame object
multiply pixel values
convert the colorspace of an image into grey
make halftone patterns
excerpt histograms of an image
convert between RGB and HSV
loads multiple image files
loads an image file
create pixes from an SGI video camera

invert an image
kaleidoscope effect
level adjustment
offset pixels depending on the luminance
mask out a pix
get the mean color of the current image
display a pix by itself
mix 2 images based on mixing factors
apply motionblurring on a series of images
timebased IIR filter for motion detection
load in a movie file
blob detector for multiple blobs
loads multiple image files

multiply 2 images
normalize an images
add an offset to the color
convert images <-> signals
posterialization effect
shuffle an image
random dot stereogram for luminance
write a sequence of pixes to a movie file
draw a rectangle into a pix
display a pix through glass bricks
resize an image
convert the colorspace of an image to RGBA
(sc)roll through an image
Realtime vs. X tranformation
scan lines of an image
set the pixel data of an image
read / write pixels from a shared memory region
take a screenshot and texture it
snap a pix of the frame buffer
subtract 2 images
transfer the alpha channel
apply texture mapping
apply dynamic thresholds to pixes for binarization
apply a threshold to pixes
live video capture with VideoShow (windows only)
open a camera and get input
make a snapshot of the frame buffer and write it to a file
convert the colorspace of an image to YUV
zoom the pixels
renders a polygon
turn on / off polygon smoothing
renders a 3d knot
renders a triangle with gradient colors
renders a rectangle
triggers on rendering
renders and distorts a square
rotation
scale
3d oscilloscope

shear
shininess of the material
renders sliding squares
specular coloring
renders a sphere
adds a spot light to the scene
renders a square
renders a teapot
renders a line of text
renders a torus
translation
renders an equilateral triangle
renders a complex tube
set the ARB vertex shader

automatic gain control

horizontal blur effect

blur effect

vertical blur effect

contrast enhancement

all edge sensitive convolution filter

emboss effect

averaging convolution filter

sobel edge detector

vertical sobel edge detector

horizontal sobel edge detector

difference between current and previous frame

dither effect

independent gain for 3 channels

gradient

matrix inverse

motion blur effect

motion triggered fade-out effect

motion phase shift effect

add an offset to an image

???

horizontal phase shift effect

phase shift effect

vertical phase shift effect

load + convert a png file

measure number of packets per second

adjust colour saturation

saves a png sequence

tag a pdp message

keyboard/mouse controller

???

bird flight and animal flock simulator

VG

ambient interaction – interaction between a collection of masses and a common environment

circle interaction – interaction between a collection of masses and a circle

cylinder interaction – interaction between a collection of masses and a cylinder

line interaction – interaction between a collection of masses and a line

plane interaction – interaction between a collection of masses and a plane

segment interaction – interaction between a collection of masses and a segment

sphere interaction – interaction between a collection of masses and a sphere

link between 2 masses

get liaison forces and output position

test masse position

get position of masses, output forces

test interaction between mass and plane

test if a sphere is inside a mass

items acrescentados

fftease 2.5

pdjimmies 0.1

nicht gut dokumentiert, aber ist da

maxlib 1.5.2

mjlib 1/2/02

motex 2001

Percolate 0.03

xsample 0.2.1

zexy 2.1

zexy Abstractions

Abstraktionen

patches /externals include

Hans

Christoph Steiner

marius@chello.at, [31.1.2002]

iemlib 1.15

pdpatches

alue

ass, etc

