IsoResampleVolume (Calls: 837, Time: 5.994 s)

Generated 03-Jul-2024 11:55:42 using performance time.
Function in file C:\Will\Matlab\Current\MichaelPalmer\NucleusRadialModelClassification\ImagePreprocessing\IsoResampleVolume.m
Copy to new window for comparing multiple runs

Parents (calling functions)

Function Name	Function Type	Calls
ChunkResample	Function	837

Lines that take the most time

Line Number	Code	Calls	Total Time (s)	% Time	Time Plot
32	`[Xq, Yq, Zq] = meshgrid(x, y, z_px2);`	837	1.383	23.1%	
52	`V = interp1(z_px, V', z_px2);`	837	1.009	16.8%	
26	`[Xs, Ys, Zs] = meshgrid(x, y, z_px); % s…`	837	0.943	15.7%	
53	`V = V';`	837	0.487	8.1%	
33	`Xq = single(Xq);`	837	0.485	8.1%	
All other lines			1.686	28.1%	
Totals			5.994	100%	

Children (called functions)

Function Name	Function Type	Calls	Total Time (s)	% Time	Time Plot
meshgrid	Function	1674	2.313	38.6%	
interp1	Function	837	0.971	16.2%	
squeeze	Function	837	0.022	0.4%	
Self time (built-ins, overhead, etc.)			2.688	44.9%	
Totals			5.994	100%	

Code Analyzer results

No Code Analyzer messages.

Coverage results

Show coverage for parent folder

Total lines in function	56
Non-code lines (comments, blank lines)	22
Code lines (lines that can run)	34
Code lines that did run	30
Code lines that did not run	4
Coverage (did run/can run)	88.24 %

Function listing

Time	Calls	Line	
		1	function V = IsoResampleVolume(V, dxdy, dz)
		2	% ISORESAMPLEVOLUME will resample a volume to be isotropic if it is not
		3	% already isotropic.
		4	
		5	% Throw error for isotropic cases
< 0.001	837	6	if dxdy == dz
		7	warning(['Resolution is already isotropic per specified'...
		8	' xy pixel size and z spacing. No computation performed.'])
		9	return
< 0.001	837	10	end
		11	
		12	% Scaling z pixels accordingly
< 0.001	837	13	dz_dx = dz/dxdy;
		14	
		15	% Dimension information from channel of interest
0.006	837	16	[M, N, Z] = size(V, [1 2 3]);
< 0.001	837	17	Z2 = ceil(Z*dz_dx); % last z index * conversion factor
		18	
		19	% Sampling vectors
0.005	837	20	x = 1:N;
0.001	837	21	y = 1:M;
0.001	837	22	z_px = 1:dz_dx:Z2; % sampled: xy pixel res scaled z slices
0.001	837	23	z_px2 = 1:Z2; % querying: integer z slicing for new sampling
		24	
		25	% Interpolation Mesh for ~isotropic resolution
0.943	837	26	[Xs, Ys, Zs] = meshgrid(x, y, z_px); % sample points
0.121	837	27	Xs = single(Xs);
0.141	837	28	Ys = single(Ys);
0.130	837	29	Zs = single(Zs);
		30	
		31	% Query points for new stacks
1.383	837	32	[Xq, Yq, Zq] = meshgrid(x, y, z_px2);
0.485	837	33	Xq = single(Xq);
0.478	837	34	Yq = single(Yq);
0.465	837	35	Zq = single(Zq);
		36	
		37	% Interpolation method
< 0.001	837	38	if islogical(V)
		39	rsmethod = 'nearest';
< 0.001	837	40	else
< 0.001	837	41	rsmethod = 'linear';
< 0.001	837	42	end
		43	
		44	% Resampled image

0.035	837	45	`V  = single(V);`
< 0.001	837	46	`if numel(y) > 1`
		47	`% When there is some y information to consider`
		48	`V = interp3(Xs, Ys, Zs, V, Xq, Yq, Zq, rsmethod);`
< 0.001	837	49	`else`
		50	`% Faster when only operating on rows`
0.027	837	51	`V = squeeze(V);`
1.009	837	52	`V = interp1(z_px, V', z_px2);`
0.487	837	53	`V = V';`
0.004	837	54	`V = reshape(V, M, N, Z2);`
< 0.001	837	55	`end`
0.261	837	56	`end`

Local functions in this file are not included in this listing.