

some of my matlab functions, GUI apps and Matlab scripts

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zip files are build such that each is self contained with all the needed matlab files and .fig file (if applicable) to run each application or function from the directory created once the zip file is unzipped

Work in progress, this page is updated all the time.

No.	file name	de- pend	zip	description
1	COMPUTED TOMOGRAPHY, MATHEMATICS AND SIMULATION using Matlab			
2	implementation of LU Decomposition and Linear Solver using Matlab			
3	Small Matlab GUI utility to change units of a Matlab .fig file. Make sure to save a copy of your fig file before using, just in case. HTML			
4	nma_185_proj3.m	de- pend	zip	Solve Lotka-Volterra 2-ODE system
5	nma_CG.m	de- pend	zip	conjugate gradient with pre-conditionin
6	nma_CG_GUI_TEST.m	de- pend	zip	GUI for conjugate gradient solver
7	nma_CG_TEST1.m	de- pend	zip	driver function for nma_CG
8	nma_CG_TEST2.m	de- pend	zip	another driver for nma_CG.m
9	nma_FDM_matrix_laplace_1D_Neumann_scheme_1.m	de- pend	zip	builds finite difference A matrix for 1-D

10	nma_FDM_matrix_laplace_1D_Neumann_scheme_2.m	depend	zip	builds finite difference A matrix for 1D boundary conditions
11	nma_FDM_matrix_laplace_1D_dirichlet.m	depend	zip	builds finite difference A matrix for 1D boundary conditions
12	nma_FDM_matrix_laplace_1D_robin.m	depend	zip	builds finite difference A matrix for 1D boundary conditions
13	nma_GENP2D.m	depend	zip	generate A and f for the $Au = f$, to solve on 5 points laplacian.
14	nma_HW2_math_228B_problem3.m report	depend	zip	solves the FitzHugh-Nagumo on unit square
15	nma_ISSPD.m	depend	zip	checks that matrix is SPD
16	nma_ISSYM.m	depend	zip	checks that matrix is symmetric
17	nma_LaxWendroff.m	depend	zip	Class implements Lax-Wendroff for 1D
18	nma_LaxWendroff_test.m	depend	zip	driver tests nma_LaxWendroff class
19	nma_MAE121_spring_2010_lab4.m report	depend	zip	lab4 assignment MAE121 dynamics, UC Davis
20	nma_MAE121_spring_2010_lab4Main.m	depend	zip	called by GUI to implement the numerical solution UC Davis
21	nma_P2DDIRJCB_S.m	depend	zip	script solves 2D Poisson PDE on unit square using iterative method
22	nma_P2DDIRSOR.m	depend	zip	Solve 2D poisson PDE on unit square. Iterative method
23	nma_P2DDIRSOR_S.m	depend	zip	script solves 2D poisson on unit square, using iterations, SOR method
24	nma_PDE_parabolic_explicit_rod.m	depend	zip	solves parabolic PDE using explicit method
25	nma_PDE_parabolic_explicit_rod_TEST.m	depend	zip	driver for nma_PDE_parabolic_explicit_rod.m
26	nma_PDE_parabolic_explicit_rod_with_rate_BC.m	depend	zip	solve parabolic PDE using explicit method with boundary conditions
27	nma_PDE_parabolic_explicit_rod_with_rate_BC_TEST.m	depend	zip	driver for nma_PDE_parabolic_explicit_rod_with_rate_BC.m

28	nma_RK4.m	de- pend	zip	solve 1st order ODE using Runge-Kutta
29	nma_SD.m	de- pend	zip	function solves $Au = f$ using the method
30	nma_V_cycle.m	de- pend	zip	implement multigrid V Cycle
31	nma_advection_pde_1D.m report	de- pend	zip	implement HW3, Math 228B, advection
32	nma_arrow.m	de- pend	zip	draws an arrow annotation on figure
33	nma_c2f.m	de- pend	zip	implements coarse to fine grid bilinear in
34	nma_change_figure_units.m	de- pend	zip	GUI main for changing figure unit prog
35	nma_check_all_zero_boundaries.m	de- pend	zip	auxiliary function to validate boundary
36	nma_controller_sim.m	de- pend	zip	main GUI file for controllor simulation
37	nma_diffusion_1d.m	de- pend	zip	main GUI file for 1D diffusion solver
38	nma_eme_121_lab1.m report	de- pend	zip	main GUI file for lab1 MAE121, UC da
39	nma_euler_heun.m	de- pend	zip	Solve ODE using Euler-Heun (corrector
40	nma_euler_heun2.m	de- pend	zip	Solve ODE using Euler-Heun (corrector
41	nma_euler_midpoint.m	de- pend	zip	solve ODE using Euler-mid-point algori
42	nma_evaluate_1D_function.m	de- pend	zip	evaluates string as 1D function for bound
43	nma_f2c.m	de- pend	zip	restriction operator for fine grid to a co mapping on 2D
44	nma_findAlphaForMinDeltaV.m	de- pend	zip	Finds initial inclincatin correction for orb circular orbit
45	nma_findPointOnLine.m	de- pend	zip	helper function for rocket design project

46	nma_find_norm.m	de- pend	zip	find the grid norm
47	nma_find_residue.m	de- pend	zip	calculates residue
48	nma_format_matrix.m	de- pend	zip	prints matrix of numerical data with he way
49	nma_gen2Ddirch.m	de- pend	zip	helper function to generate A,b for solv
50	nma_gener- ate_A_and_ARHS_for_2D_diffu- sion_Neumman.m	de- pend	zip	generate the A and B matrices used by
51	nma_generate_dep_files.m	de- pend	zip	This function generates one text file for the same folder it is running from. For e generates the text file which contains a l the current m file depends on. This uses fdep() function from matlab c
52	nma_generate_dep_files_V2.m	de- pend	zip	This function generates one text file for the same folder it is running from. For e generates the text file which contains a l the current m file depends on. This uses fdep() function from matlab c march 1, 2013 clean up more, moved to
53	nma_getDeltaTimeFromDeltaNu.m	de- pend	zip	calculates time of flight for the orbit mo
54	nma_getFlux1.m	de- pend	zip	flux function for PDE numerical course.
55	nma_getOrbitParams.m	de- pend	zip	find orbit parameters from the velocity
56	nma_getUniversalVariable.m	de- pend	zip	compute the Universal Variable X for a
57	nma_get_index.m	de- pend	zip	helper function to find index
58	nma_inputNumeric.m	de- pend	zip	read a numeric number from user and k user types correct value
59	nma_lab2_eme_121.m report	de- pend	zip	main GUI file for lab2 MAE 121 UC Da

60	nma_lab3_eme_121.m report	de- pend	zip	main GUI file for lab3 MAE 121, UC D
61	nma_lap1d.m	de- pend	zip	helper function to make sparse matrix
62	nma_lap2d.m	de- pend	zip	helper function to make sparse 2D matr
63	nma_lap3d.m	de- pend	zip	generate 3D sparse matrix for poisson 3
64	nma_laplaceRectDirchlet.m	de- pend	zip	solve laplace PDE for rectangular region
65	nma_laplaceRectDirchletBendCorner.m	de- pend	zip	solves laplace PDE for rectangular regio
66	nma_laplaceRectNuemann.m	de- pend	zip	solves laplace PDE for rectangular regio
67	nma_math228.m	de- pend	zip	main GUI file for all my math 228 other
68	nma_math228b_HW2_prob2.m	de- pend	zip	implements the refinement study for L Davis
69	nma_math_228b_HW4_par- blem_1_part_b.m report	de- pend	zip	Lax-Wendroff to solve the wave equatio
70	nma_math_228b_HW4_problem_3.m	de- pend	zip	solves diffusion problem $u_t + a * u_x =$ method with flux limiter functions
72	nma_modal_v2.m	de- pend	zip	solves 3 bars and 2 springs with IC using solution
73	nma_moveProbe.m	de- pend	zip	Moves probe in an orbit for deltaTime
74	nma_orbit_simulator.m	de- pend	zip	main GUI file for orbit simulator
75	nma_plot_stress_dia- gram_in_2D_script.m	de- pend	zip	script to plot stress diagram, plain stres
76	nma_poisson_GUI.m report	de- pend	zip	main GUI file for poisson 2D solver
77	nma_process_eme_121_lab1.m	de- pend	zip	called by the Matlab GUI to solve equa MAE 121

78	nma_rect_pulse_on_periodic_1D.m	de- pend	zip	class implements the rectangular pulse tion of HW3, Math 228B.
79	nma_rectangle.m	de- pend	zip	make an annotation of a rectangle
80	nma_refinement_study_manager.m	de- pend	zip	class used for doing refinement study for ical PDE class
81	nma_relax.m	de- pend	zip	does one iteration relaxation, called by solver
82	nma_rescale.m	de- pend	zip	Nasser M. Abbasi 011212 NO ERROR ON INPUT. Rescale a matrix or a vecto
83	nma_rocket_design.m	de- pend	zip	design rocket from earth to GEO
84	nma_rocket_design_PERMUTE.m	de- pend	zip	helper function for rocket design project
85	nma_rocket_getLagrangeMultiplier.m	de- pend	zip	Solves equation 5.57 in book orbital me Prussing and Conway
86	nma_rocket_mutliStageSolutionLa- grange.m	de- pend	zip	design for a multi-stage rocket.
87	nma_rocket_solveRocketEquationOn- eStage.m	de- pend	zip	Solves for M_p (mass of properellent) an ture) for a given one stage rocket.
88	nma_rocket_solveRocketEquationOn- eStage_form2.m	de- pend	zip	Solves rocket equation for delta V, mas mass of structure and payload
89	nma_rocket_solveRocketEquationOn- eStage_form3.m	de- pend	zip	Solves rocket equation for delta V, mas mass of structure and payload
90	nma_romberg.m	de- pend	zip	generate the Romberg integration table
91	nma_romberg_test.m	de- pend	zip	driver to test romberg integration table
92	nma_runProbeSimulation.m	de- pend	zip	runs simulation of probe starting from velocity vector for some delta time
93	nma_set_figure_position.m	de- pend	zip	utility function, called to create a figure
94	nma_solveProb_43.m	de- pend	zip	solves HW problem 4.3

95	nma_solve_2D_diffusion_ADI.m	de- pend	zip	Solves 2D diffusion PDE $u_t = D(u_{xx} + u_{yy})$ on unit square Neumann BC using cell centered scheme
96	nma_solve_2D_diffusion_ADI_TEST_script.m	de- pend	zip	script to solve 2D diffusion
97	nma_solve_gauge_ODE.m	de- pend	zip	solves $w_t = \epsilon(w - \gamma w)$ for Math 228B UC Davis
98	nma_solve_reaction_ODE.m	de- pend	zip	solves the reaction ODE part of the Fitzhugh-Nagumo equations
99	nma_solver_Vcycle.m	de- pend	zip	Solve poisson 2D pde on unit square zero Dirichlet BC using V cycle method
100	nma_spline.m	de- pend	zip	computes the cubic splines between any two points
101	nma_spline_test.m	de- pend	zip	driver for cubic splines using the improved algorithm
102	nma_spring.m	de- pend	zip	static class to make spring for plotting a spring
103	nma_steady_state.m	de- pend	zip	simulation of steady state single degree of freedom with harmonic input
104	nma_testfindAlphaForMinDeltaV.m	de- pend	zip	driver to test findAlphaForMinDeltaV
105	nma_trapezoidal.m	de- pend	zip	integrate a function using trapezoidal rule with a given number of strips.
106	nma_using_ffteasy.m	de- pend	zip	
107	nma_validate_dimensions.m	de- pend	zip	auxiliary function used by other functions to check if dimensions are consistent.
108	nma_validate_dimensions_1.m	de- pend	zip	auxiliary function validates input dimensions for 1D only
109	nma_verify_valid_non_negative_numeric.m	de- pend	zip	verifies string represents non negative numeric
110	nma_verify_valid_numeric.m	de- pend	zip	verifies input string represents a numeric
111	nma_verify_valid_positive_integer.m	de- pend	zip	verifies input string represents positive integer

112	nma_verify_valid_positive_numeric.m	de- pend	zip	verifies input string represents positive
113	nma_zoom_image.m	de- pend	zip	zoom a gray image by factor and return
114	source file implement steepest descent		zip	