J. LUNZE: Graph-Theoretical Methods in Systems Theory and Control Edition MoRa 2024

Figures that have been produced with MATLAB

22. Dezember 2023

The following table shows figures of the book, which have been produced with MATLAB (Version 2022a). The figure names have been derived from the name of the corresponding MATLAB script.

Figure	Caption	File name
2.26	Result of a depth-first search	Search2.eps
2.26	Result of a breadth-first search	Search3.eps
2.27	Result of the Dijkstra algorithm for the graph of Fig. 2.16 \ldots	Search1.eps
2.28	Lattice for graph search	Search5.eps
6.30	Response of the coupled motors to a step input $u(t) = 115 \sigma(t)$ with $d_1(t) = d_2(t) = 0$	IntercMotors2.eps
6.31	Disturbance behaviour of the coupled motors	IntercMotors3.eps
7.28	Attenuation of a step disturbance $(T = 1, k_s = 1, k_P = 0.2, k_I = 0.8, x_0 = 0)$	DistAtten1.eps
7.30	Attenuation of an oscillating disturbance	DistAtten2.eps
7.31	Attenuation of an oscillating disturbance that has a different fre- quency as the internal model of the controller	DistAtten3.eps
7.36	Convergence of the state observation result with precise pendulum model	UnobservPend2.eps
7.37	Diverging observation results due to model uncertainties	UnobservPend3.eps
7.42	Behaviour of the building for sinusoidal input	Taipeh1.eps
7.43	Building behaviour with and without damper	Taipeh2.eps
7.44	Comparison of the magnitude plot of the building with and without damper	Taipeh3.eps
7.45	Behaviour of the building for the "wrong" wind	Taipeh6.eps
9.34	Behaviour of the Markov chain describing a machine tool	Queue1.eps
9.35	Behaviour of the machine tool	Queue2.eps
9.45	Behaviour of an aperiodic Markov chain	Stationary1.eps
9.55	Comparison of the machine tool without control (dashed line) and with feedback controller (solid line)	Stationary7.eps
10.20	Binomial distribution (10.39) for $m_{\text{max}} = 3$ and $p = 0.4$	RandomGraphs7.eps

10.21	Binomial distribution (10.39) for $N = 25$	RandomGraphs1.eps
10.23	Characteristic path length of random graphs determined numerically for 600 realisations	RandomGraphs3.eps
10.24	Diameter of random graphs with the average vertex degree $\bar{d} = 15$ in dependence upon the number N of vertices	RandomGraphs4.eps
10.26	Mean number \bar{s} of connected components (above) and probability for random graphs to be connected for $N = 20$ (solid line) and N = 45 (dashed line; below)	RandomGraphs5.eps
11.31	Behaviour of the dynamometer in a test: Moments in Nm (above) and velocities in km/h (below)	Dynamometer1.eps
11.32	Result of a faulty test	Dynamometer3.eps
11.33	Residual r_2 (top) and estimated braking moment $\hat{M}_{\rm B}$ (bottom) for the faultless behaviour (dashed line) and the faulty behaviour (solid line)	Dynamometer2.eps
12.5	Behaviour of three coupled oscillators with the same initial states, but different coupling strengths	SyncGMSC10.eps
12.6	Trajectories of two oscillators with different coupling structures $\$	SyncGMSC2.eps
12.7	Communication graph and consensus behaviour of an integrator net- work	SyncGMSC3.eps
12.8	Expected eigenvalue (top) and expected settling time (bottom) in dependence upon the connection probability p of the communication graph	SyncGMSC4.eps
12.10	Comparison of the consensus dynamics for systems with three reali- sations of their random communication graph	SyncGMSC5.eps
12.15	Behaviour of agent 9 without (solid line) and with (dashed line) the additional communication link	DelayGMSC1.eps
12.21	Step response of the controlled robots $\overline{\Sigma}_i$	DelayGMSC3.eps
12.23	Behaviour of the five robots with the communication graphs of Fig. 12.22	DelayGMSC4.eps
12.28	Expected path length v_i for 40 agents with parameters $p \in \{0, 0.03, 0.06, 0.1, 0.13, 0.4\}$	DelaySelfOrg1.eps
12.29	Performance of 21 robots with path connection (above) and with the effective communication graph (below)	DelaySelfOrg2.eps
12.30	Delay of the robot formation in two experiments with the same connection probability $p = 0.1$	DelaySelfOrg3.eps
12.30	Delay of the robot formation in two experiments with the same connection probability $p = 0.1$	DelaySelfOrg4.eps
12.32	Probability of the edge $(i-1 \rightarrow i)$ of the basic communication graph to be an edge of the effective communication graph	DelaySelfOrg5.eps
A1.1	Depth-first search of a reachability tree with the root vertex 1	Search6.eps
A1.1	Breadth-first search of a reachability tree with the root vertex 1	Search7.eps
A1.2	Depth-first search of a reachability tree with the root vertex 22 .	Search8.eps

A1.2	Breadth-first search of a reachability tree with the root vertex 22	Search9.eps
A1.40	Dependency of the effective resistance upon the resistance R_5	NetwAnal1.eps
A1.53	Behaviour of the Markov chain for two different initial distributi-	Stationary2.eps
A1.55	Behaviour of a communication channel with $N = 10$ links	Stationary3.eps
A1.55	Behaviour of a communication channel with $N = 10$ links	Stationary5.eps
A1.56	Behaviour of the communication channel for $\alpha = 0.5$	Stationary4.eps
A1.67	Effective resistance in dependence upon the probability p	RandomGraphs6.eps
A1.82	Diagnostic result for the vehicle: Residual $r(t)$ for the faultless vehicle (dashed line) and the faulty vehicle (solid line)	ARRVehicle2.eps
A1.83	Communication graph and consensus behaviour of an integrator net- work	SyncGMSC11.eps
A1.84	Mean settling time in dependence upon the probability of additional communication links	SyncGMSC8.eps
A1.85	Behaviour of the multirotor fleet without additional communication links	SyncGMSC12.eps
A1.85	Behaviour of the multirotor fleet with 78 additional communication links	SyncGMSC9.eps
A1.86	Step responses of lag systems (12.58) with $T_1 = 1$	DelayGMSC5.eps
A1.87	Output $y(\Delta)$ for the second-order system (12.59) with $T_1 = 1$ and $T_2 \in [0,5]$	DelayGMSC6.eps
A1.90	Step response of a vehicle platoon with four vehicles	DelayGMSC7.eps
A1.91	Velocities and distances of the vehicle swarm with the communica- tion graph shown in the right part of Fig. A1.88	DelayGMSC9.eps
A1.92	Comparison of vehicle distances in the CACC structures of Fig. A1.88 (dashed lines) and Fig. A1.89 (solid lines)	DelayGMSC11.eps