Supplementary material for: Estimation and model selection of heterogeneous mixture distributions: an ECME algorithm-based approach

Abstract

This document contains tables illustrating some of the outcomes of the simulation experiments detailed in the paper "Estimation and model selection of heterogeneous mixture distributions: an ECME algorithm-based approach".

A Simulation results for $\alpha = 1.5$

A.1 MSEs for $n = 100$

Table A.1: MSE of the two methods when $\pi = 0.7$ and $x_{min} = 3$ and $\alpha = 1.5$.

		π	α	μ	σ	x_{min}
ECME	MSE	0.045	6.270×10^5	0.159	0.035	746.102
	MSE_{med}	0.062	0.686	0.231	0.040	0.136
Prof	MSE	0.033	8.971×10^5	0.164	0.043	286.380
	MSE_{med}	0.059	42.091	0.243	0.058	0.163

Table A.2: MSE of the two methods when $\pi = 0.7$ and $x_{min} = 5$ and $\alpha = 1.5$.

		π	α	μ	σ	x_{min}
ECME	MSE	0.041	1.240×10^{12}	0.230	0.077	3.001×10^3
	MSE_{med}	0.065	0.401	0.319	0.113	0.215
Prof	MSE	0.017	1.299×10^6	0.138	0.053	688.281
	MSE_{med}	0.007	0.441	0.071	0.033	0.070

Table A.3: MSE of the two methods when $\pi = 0.95$ and $x_{min} = 3$ and $\alpha = 1.5$.

		π	α	μ	σ	x_{min}
ECME	MSE	0.012	7.648×10^9	0.035	0.016	55.164
	MSE_{med}	0.015	1.545	0.037	0.015	2.488
Prof	MSE	0.008	2.793×10^6	0.032	0.012	26.326
	MSE_{med}	0.000	1.015×10^5	0.018	0.008	4.582

Table A.4: MSE of the two methods when $\pi = 0.95$ and $x_{min} = 5$ and $\alpha = 1.5$.

		π	α	μ	σ	x_{min}
ECME	MSE	0.010	4.480×10^{11}	0.033	0.017	155.001
	MSE_{med}	0.007	2.071	0.029	0.018	9.473
Prof	MSE	0.012	2.622×10^{6}	0.047	0.020	41.452
	MSE_{med}	0.001	6.163×10^{4}	0.026	0.016	15.909

A.2 MSEs for $n = 500$

Table A.5: MSE of the two methods when $\pi = 0.7$ and $x_{min} = 3$ and $\alpha = 1.5$.

		π	α	μ	σ	x_{min}
ECME	MSE	0.038	6.771×10^{12}	0.122	0.022 6.749×10^{3}	
	MSE_{med}	0.019	0.043	0.122	0.030	0.003
Prof	MSE	0.004	0.856	0.024	0.011	0.004
	MSE_{med}	0.002	0.023	0.012	0.005	0.001

Table A.6: MSE of the two methods when $\pi = 0.7$ and $x_{min} = 5$ and $\alpha = 1.5$.

		π	α	μ	σ	x_{min}
ECME	MSE	0.037	3.246×10^{12}	0.194	0.062	1.306×10^{4}
	MSE_{med}	0.007	0.034	0.073	0.036	0.004
Prof	MSE	0.001	0.015	0.005	0.003	0.005
	MSE_{med}	0.001	0.015	0.005	0.002	0.001

Table A.7: MSE of the two methods when $\pi = 0.95$ and $x_{min} = 3$ and $\alpha = 1.5$.

		π	α	μ	σ	x_{min}
ECME	MSE	0.003	1.765×10^{10}	0.008	0.004	277.404
	MSE_{med}	0.005	0.741	0.010	0.003	1.430
Prof	MSE	0.002	1.291×10^{7}	0.011	0.004	133.981
	MSE_{med}	0.001	3.708×10^{4}	0.011	0.004	5.074

Table A.8: MSE of the two methods when $\pi = 0.95$ and $x_{min} = 5$ and $\alpha = 1.5$.

		π	α	μ	σ	x_{min}
ECME	MSE	0.003	8.863×10^{12}	0.009	0.007	3.921×10^{3}
	MSE_{med}	0.005	0.892	0.011	0.008	8.150
Prof	MSE	0.003	1.170×10^{7}	0.013	0.008	259.351
	MSE_{med}	0.001	621.607	0.015	0.010	16.119

B Simulation results for $\alpha = 2$

B.1 MSEs for $n = 100$

Table B.1: MSE of the two methods when $\pi = 0.7$, $x_{min} = 3$ and $\alpha = 2$.

		π	α	μ	σ	x_{min}
ECME	MSE	0.026	1.982×10^{10}	0.085	0.020	64.439
	MSE_{med}	0.016	0.339	0.095	0.022	0.009
Prof	MSE	0.018	5.093×10^{5}	0.089	0.025	1.236
	MSE_{med}	0.017	2.239	0.130	0.031	0.010

Table B.2: MSE of the two methods when $\pi = 0.7$, $x_{min} = 5$ and $\alpha = 2$.

		π	α	μ	σ	x_{min}
ECME	MSE	0.024	1.751×10^{10}	0.121	0.037	174.020
	MSE_{med}	0.010	0.284	0.074	0.042	0.019
Prof	MSE	0.010	2.280×10^{5}	0.067	0.029	6.225
	MSE_{med}	0.005	0.423	0.046	0.024	0.017

Table B.3: MSE of the two methods when $\pi = 0.95$, $x_{min} = 3$ and $\alpha = 2$.

		π	α	μ	σ	x_{min}
ECME	MSE	0.012	1.177×10^{10}	0.034	0.015	19.310
	MSE_{med}	0.015	1.286	0.037	0.014	1.671
Prof	MSE	0.004	2.950×10^{6}	0.026	0.009	10.486
	MSE_{med}	0.001	1.281×10^{5}	0.016	0.007	4.503

Table B.4: MSE of the two methods when $\pi = 0.95$, $x_{min} = 5$ and $\alpha = 2$.

		π	α	μ	σ	x_{min}
ECME	MSE	0.011	1.200×10^{9}	0.036	0.016	36.408
	MSE_{med}	0.009	1.802	0.036	0.017	6.289
Prof	MSE	0.005	2.759×10^{6}	0.031	0.014	27.516
	MSE_{med}	0.001	1.173×10^{5}	0.021	0.012	15.683

B.2 MSEs for $n = 500$

Table B.5: MSE of the two methods when $\pi = 0.7$, $x_{min} = 3$ and $\alpha = 2$.

		π	α	μ	σ	x_{min}
ECME	MSE	0.020	3.116×10^{11}	0.059	0.009	615.074
	MSE_{med}	0.003	0.052	0.022	0.010	0.000
Prof	MSE	0.002	0.313	0.013	0.006	0.002
	MSE_{med}	0.002	0.050	0.012	0.006	0.000

Table B.6: MSE of the two methods when $\pi = 0.7$, $x_{min} = 5$ and $\alpha = 2$.

		π	α	μ	σ	x_{min}
ECME	MSE	0.021	2.948×10^{10}	0.097	0.025	753.067
	MSE_{med}	0.002	0.032	0.014	0.008	0.000
Prof	MSE	0.001	0.029	0.005	0.003	0.002
	MSE_{med}	0.001	0.025	0.005	0.003	0.000

Table B.7: MSE of the two methods when $\pi = 0.95$, $x_{min} = 3$ and $\alpha = 2$.

		π	α	μ	σ	x_{min}
ECME	MSE	0.002	6.696×10^{9}	0.006	0.003	43.921
	MSE_{med}	0.003	0.568	0.007	0.003	0.357
Prof	MSE	0.002	1.235×10^{7}	0.009	0.003	28.605
	MSE_{med}	0.001	9.253×10^{4}	0.008	0.003	4.891

Table B.8: MSE of the two methods when $\pi = 0.95$, $x_{min} = 5$ and $\alpha = 2$.

		π	α	μ	σ	x_{min}
ECME	MSE	0.002	8.700×10^9	0.007	0.004	82.785
	MSE_{med}	0.001	0.749	0.007	0.005	1.098
Prof	MSE	0.002	1.642×10^7	0.012	0.006	29.563
	MSE_{med}	0.001	1.556×10^4	0.014	0.007	15.464