simulation table for proposed GCTA

Simulation setup

The key factors are

- 1. Distribution
- 2. Covariance matrix
 - Note that if the covariance matrix is I, which means uncorrlated data and also indicates Independence in our paper.
 - we also use the the sample vairance matrix calculated from the real PCB data
- 3. Decorrelation method
 - SVD, dimension reduction before SVD and none
- 4. main and interaction coefficients
 - $\beta_m = \beta_{mf} + \beta_{mr}$ where $\beta_{mf} \sim N(0, \sigma_{mf}^2)$ and $\beta_{mr} \sim N(0, \sigma_{mr}^2)$ if $\sigma_{mr}^2 = 0$ means main effect is fixed, otherwise it's random
 - $\beta_i = \beta_{if} + \beta_{ir}$ where $\beta_{if} \sim N(0, \sigma_{if}^2)$ and $\beta_{ir}^2 \sim N(0, \sigma_{ir}^2)$ if $\sigma_{ir}^2 = 0$ means internaction effect is fixed, otherwise it's random. Besides, if $\sigma_{if}^2 = 0$ then means there is no interaction effect
- 5. Sample size = $\{200,\,\ldots,\,900\}$ and p=33
- 6. Total Iteration times: 200

	Table 1: Fixed cases									
ID	Dist	Corr_stru	decorr	main_fixed	main_random	inter_random	inter_fixed	estimation_model	finished_date	
1	Normal	I	SVD	0.5	0	0	0.0	main		
2	Normal	I	SVD	0.5	0	0	0.0	main /& interaction		
3	Normal	I	SVD	0.5	0	0	0.0	total		
4	Normal	I	SVD	0.5	0	0	0.1	main		
5	Normal	I	SVD	0.5	0	0	0.1	main /& interaction		
6	Normal	I	SVD	0.5	0	0	0.1	total		
7	Normal	pcb	SVD	0.5	0	0	0.0	main		
8	Normal	pcb	SVD	0.5	0	0	0.0	main /& interaction		
9	Normal	pcb	SVD	0.5	0	0	0.0	total		
10	Normal	pcb	SVD	0.5	0	0	0.1	main		
11	Normal	pcb	SVD	0.5	0	0	0.1	main /& interaction		
12	Normal	pcb	SVD	0.5	0	0	0.1	total		
13	Chi-square	I	SVD	0.5	0	0	0.0	main		
14	Chi-square	I	SVD	0.5	0	0	0.0	main /& interaction		
15	Chi-square	I	SVD	0.5	0	0	0.0	total		
16	Chi-square	I	SVD	0.5	0	0	0.1	main		
17	Chi-square	I	SVD	0.5	0	0	0.1	main /& interaction		
18	Chi-square	I	SVD	0.5	0	0	0.1	total		
19	Chi-square	pcb	SVD	0.5	0	0	0.0	main		
20	Chi-square	pcb	SVD	0.5	0	0	0.0	main /& interaction		
21	Chi-square	pcb	SVD	0.5	0	0	0.0	total		
22	Chi-square	pcb	SVD	0.5	0	0	0.1	main		
23	Chi-square	pcb	SVD	0.5	0	0	0.1	main /& interaction		
24	Chi-square	pcb	SVD	0.5	0	0	0.1	total		
25	PCB	pcb	SVD	0.5	0	0	0.0	main		
26	PCB	pcb	SVD	0.5	0	0	0.0	main /& interaction		
27	PCB	pcb	SVD	0.5	0	0	0.0	total		
28	PCB	pcb	SVD	0.5	0	0	0.1	main		
29	PCB	pcb	SVD	0.5	0	0	0.1	main /& interaction		
30	PCB	pcb	SVD	0.5	0	0	0.1	total		
31	PCB	pcb	dim_SVD	0.5	0	0	0.0	main		
32	PCB	pcb	dim_SVD	0.5	0	0	0.0	main /& interaction		
33	PCB	pcb	dim_SVD	0.5	0	0	0.0	total		
34	PCB	pcb	dim_SVD	0.5	0	0	0.1	main		
35	PCB	pcb	dim_SVD	0.5	0	0	0.1	main /& interaction		
36	PCB	pcb	dim_SVD	0.5	0	0	0.1	total		

Table 2: random cases ID main_random | inter_random | inter_fixed Dist Corr_stru estimation_model finished_date decorr main fixed 0.250.25 1 Normal SVD 0.00 0.00 ${\rm main}$ 2 Normal SVD 0.25 0.25 0.00 0.00 main /& interaction Normal 3 SVD 0.250.250.00T 0.00total 4 Normal SVD 0.25 0.25 0.00 0.10 main SVD 0.25 0.25 0.00 0.10 5 Normal main /& interaction 6 NormalSVD 0.250.25 0.000.10total 7 Normal SVD 0.25 0.25 0.05 0.05 main 0.25 0.05 $\operatorname{main} \ / \& \ \operatorname{interaction}$ SVD 0.250.05 8 Normal Ι 9 Normal SVD 0.25 0.25 0.05 0.05 10 Normal SVD 0.25 0.25 0.00 0.00 pcb main 11 Normal pcb SVD 0.250.250.00 0.00 main /& interaction 12 Normal pcb SVD 0.25 0.25 0.00 0.00 total SVD 0.25 13 Normal pcb 0.250.00 0.10 main 14 Normal pcb SVD 0.25 0.25 0.00 0.10main /& interaction 0.25 15 \overline{pcb} SVD 0.25 0.00 0.10 Normal total 16 Normal pcb SVD 0.250.250.050.05main 17 Normal pcbSVD 0.25 0.25 0.05 0.05 main /& interaction 0.25 18 Normal pcb SVD 0.250.05 0.05 total 19 Chi-square SVD 0.25 0.25 0.00 0.00 main Chi-square SVD 0.25 main /& interaction 20 0.25 0.00 0.00 21 Chi-square T SVD 0.25 0.25 0.00 0.00 total 22 Chi-square SVD 0.25 0.25 0.00 0.10 main 23 SVD 0.25 0.25 Chi-square 0.000.10 main /& interaction 24 Chi-square I SVD 0.25 0.25 0.00 0.10 total 25 SVD 0.25 0.25 0.05 0.05 Chi-square main 26 Chi-square SVD 0.25 0.25 0.05 0.05 main /& interaction 27 Chi-square SVD 0.25 0.25 0.05 0.05 total 28 0.00 Chi-square SVD 0.25 0.25 pcb 0.00main 29 Chi-square SVD 0.25 0.25 0.00 0.00 main /& interaction pcb 30 Chi-square SVD 0.25 0.25 0.00 0.00total pcb $\overline{\text{pcb}}$ 31 Chi-square SVD 0.25 0.25 0.00 0.10 main 32 Chi-square pcb SVD 0.25 0.25 0.00 0.10 main /& interaction 33 Chi-square pcb SVD 0.250.250.000.10total Chi-square SVD 0.25 0.25 0.05 0.05 pcb main 35 SVD 0.25 Chi-square 0.25 0.05 0.05 main /& interaction pcb 36 Chi-square SVD 0.25 0.25 0.05 0.05 total pcb 0.25 37 PCB pcbSVD 0.25 0.00 0.00 main 38 PCB pcb SVD 0.250.250.000.00main /& interaction 39 PCB SVD 0.25 pcb 0.25 0.00 0.00 total 40 PCB SVD 0.25 0.25 0.00 0.10 pcb main pcb 41 PCB SVD 0.25 0.25 0.00 0.10 main /& interaction 0.25 42 PCB pcb SVD 0.25 0.00 0.10 total 43 PCB pcb SVD 0.25 0.25 0.05 0.05 main 44 PCB SVD 0.25 0.25 pcb 0.05 0.05 main /& interaction PCB 0.25 45 SVD 0.250.05 0.05 pcb total $\dim_{\mathbb{Z}} SVD$ 46 PCB pcb 0.25 0.25 0.00 0.00 main dim SVD 47 PCB 0.25 0.25 0.00 0.00 main /& interaction pcb pcb 48 PCB $\dim_{\mathbb{Z}}SVD$ 0.25 0.25 0.00 0.00 total PCB dim SVD 0.25 49 pcb 0.250.000.10 main $\dim _{\rm SVD}$ PCB 0.25 0.2550 pcb 0.000.10main /& interaction 51 PCB dim_SVD 0.250.25 0.00 0.10 total pcb 52 PCBpcb $\dim SVD$ 0.250.25 0.05 0.05 main 53PCB pcb $\dim _SVD$ 0.250.250.05 0.05 main /& interaction dim SVD 54 PCB pcb 0.250.250.050.05total