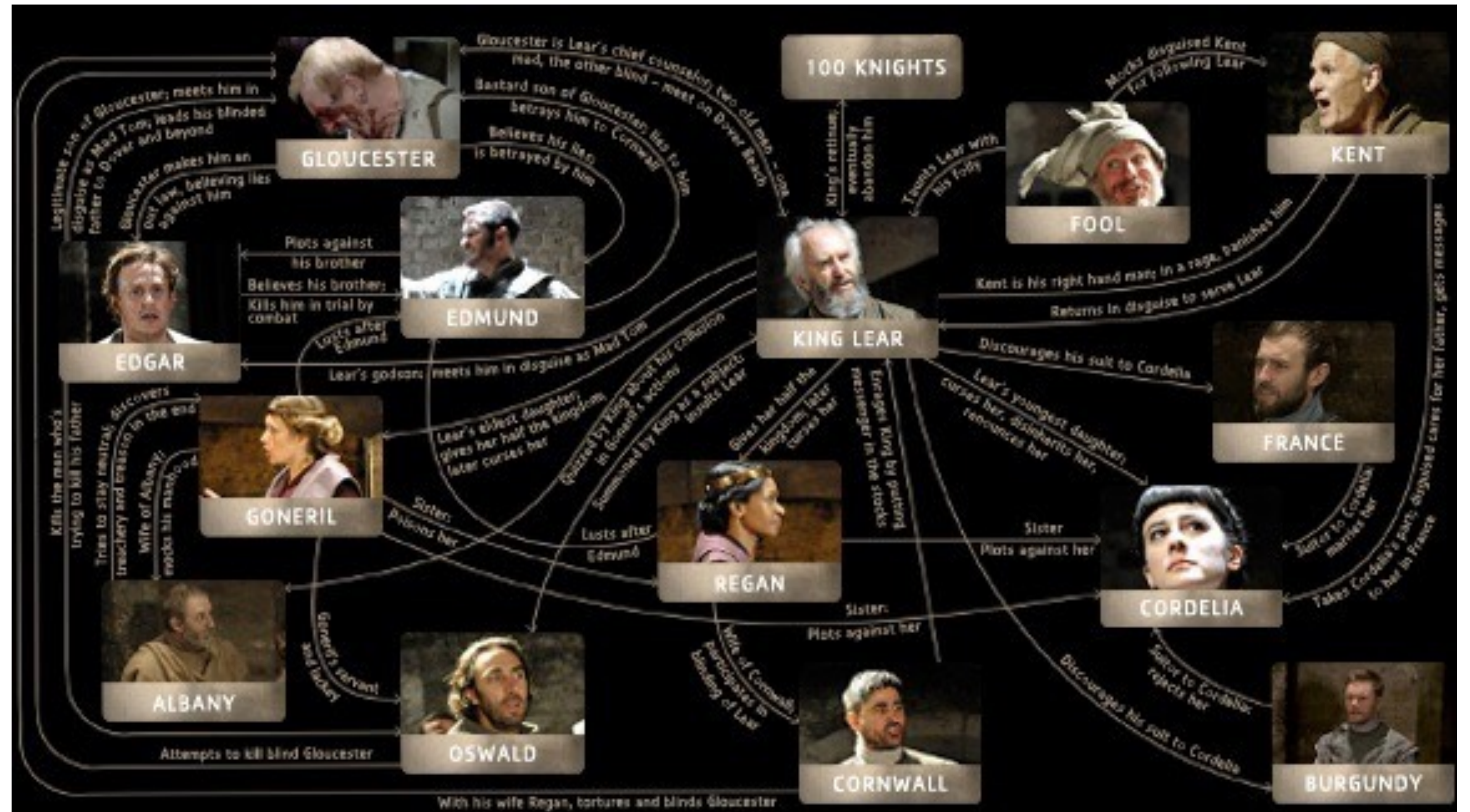
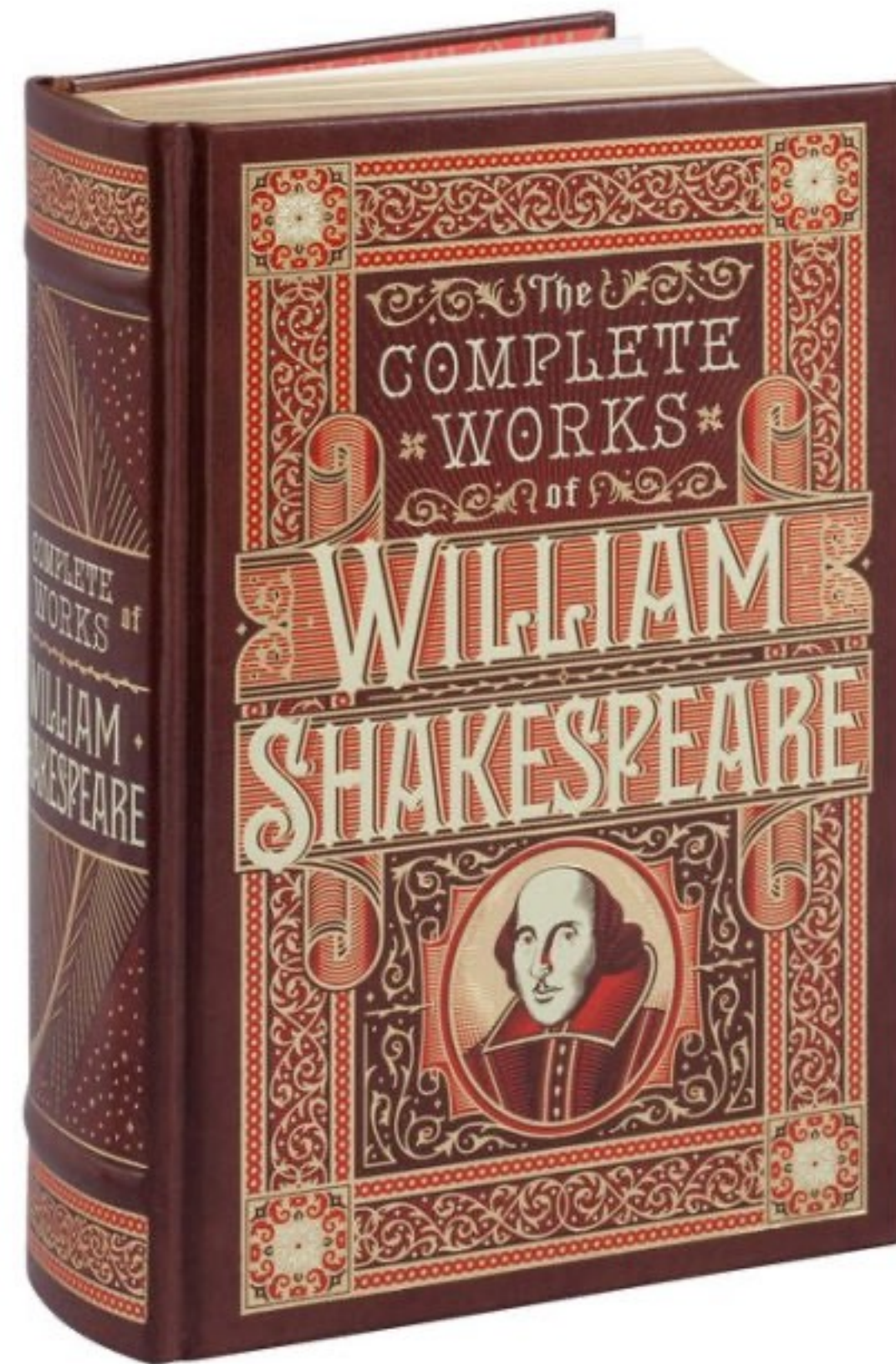


Language modeling



MNIST CNN, 99% ACCURACY					
CNN	E	B	u	IID	Non-IID
FEDSGD	1	∞	1	626	483
FEDAVG	5	∞	5	179 (3.5 \times)	1000 (0.5 \times)
FEDAVG	1	50	12	65 (9.6 \times)	600 (0.8 \times)
FEDAVG	20	∞	20	234 (2.7 \times)	672 (0.7 \times)
FEDAVG	1	10	60	34 (18.4 \times)	350 (1.4 \times)
FEDAVG	5	50	60	29 (21.6 \times)	334 (1.4 \times)
FEDAVG	20	50	240	32 (19.6 \times)	426 (1.1 \times)
FEDAVG	5	10	300	20 (31.3 \times)	229 (2.1 \times)
FEDAVG	20	10	1200	18 (34.8 \times)	173 (2.8 \times)

SHAKESPEARE LSTM, 54% ACCURACY					
LSTM	E	B	u	IID	Non-IID
FEDSGD	1	∞	1.0	2488	3906
FEDAVG	1	50	1.5	1635 (1.5 \times)	549 (7.1 \times)
FEDAVG	5	∞	5.0	613 (4.1 \times)	597 (6.5 \times)
FEDAVG	1	10	7.4	460 (5.4 \times)	164 (23.8 \times)
FEDAVG	5	50	7.4	401 (6.2 \times)	152 (25.7 \times)
FEDAVG	5	10	37.1	192 (13.0 \times)	41 (95.3 \times)

