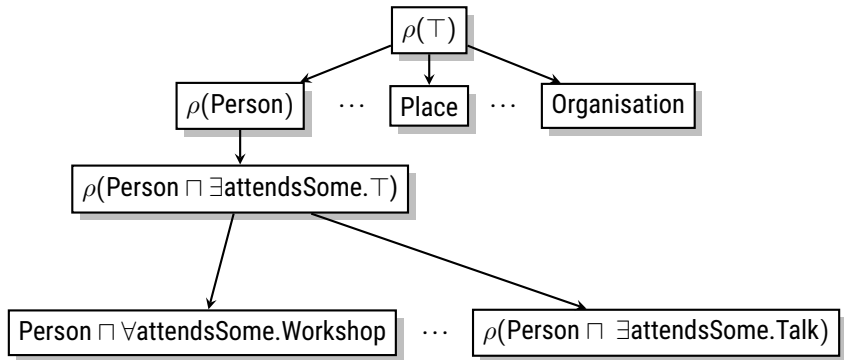# Machine Learning on Knowledge Graphs
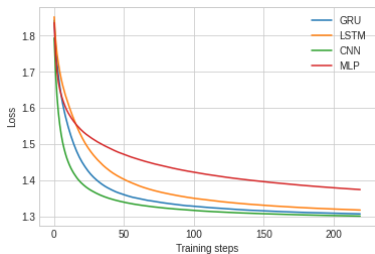
N'dah Jean Kouagou
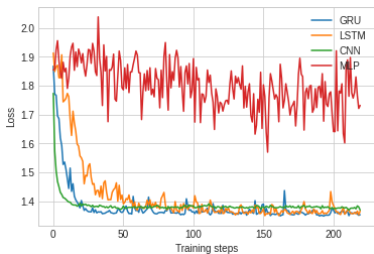
DICE

Data Science Group
Paderborn University

April 26, 2021
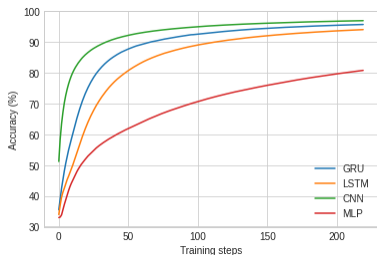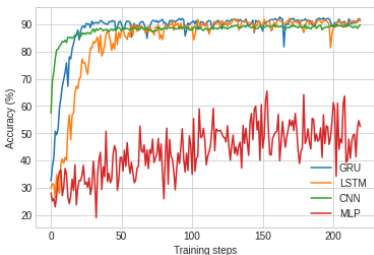
PADERBORN
UNIVERSITY

DICE

Current Results

(a) Loss on the training data set

(b) Loss on the validation data set

(c) Accuracy on the training data set

(d) Accuracy on the validation data set

Current Results

	Carcinogenesis		Moral Reasoner		Semantic Bible	
	CELOE	CELOE-CLP	CELOE	CELOE-CLP	CELOE	CELOE-CLP
Avg. runtime (s)	105.4 ± 178.1	$\mathbf{41.2}^* \pm 70.6$	3.4 ± 0.5	$\mathbf{1.0}^* \pm 1.4$	92.3 ± 162.8	$\mathbf{70.3} \pm 115.3$
Avg. solution quality	$\mathbf{0.65} \pm .41$	0.64 ± 0.42	$\mathbf{0.68} \pm 0.20$	0.66 ± 0.20	$\mathbf{0.82} \pm 0.29$	0.80 ± 0.32
Avg. num. con. tested	6946 ± 2060	$\mathbf{4951}^* \pm 2739$	5108 ± 128	$\mathbf{1537}^* \pm 2043$	2444 ± 1230	$\mathbf{1460}^* \pm 699$
Avg. solution length	4.6 ± 5.41	$\mathbf{2.82}^* \pm 1.55$	$3.54 \pm .98$	$\mathbf{1.94}^* \pm .1.12$	5.66 ± 5.32	$\mathbf{3.64}^* \pm 1.58$