

Interactive Machine Learning by Visualization : A Small Data Solution

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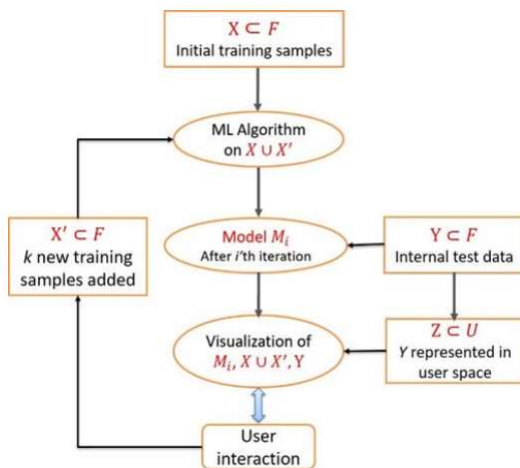
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Project Objectives:

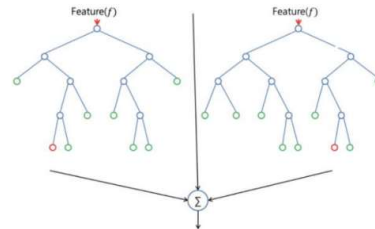
Introduce a novel visual analytics methodology for interactive machine learning

- Facilitates real-time user input to change efficacy of model
- Potential to substantially reduce volume of data for training a precise model
- Capability to steer the trajectory of the analysis

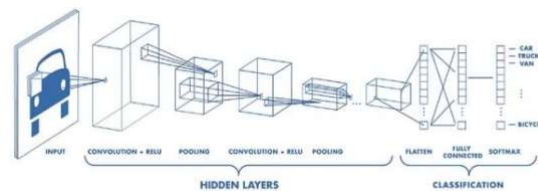
Framework of Interactive machine learning system



Random Forest



Convolutional Neural Network



Results:

Classification report on small dataset

Classification Report				
	precision	recall	f1-score	support
0	0.94	1.00	0.97	17
1	1.00	0.86	0.92	28
2	0.80	1.00	0.89	16
3	0.83	0.94	0.88	16
4	0.96	0.86	0.91	28
5	0.88	1.00	0.89	20
6	1.00	0.85	0.92	20
7	1.00	0.88	0.93	24
8	0.80	0.80	0.80	10
9	0.82	0.86	0.84	21
accuracy			0.90	200
macro avg	0.90	0.90	0.89	200
weighted avg	0.91	0.90	0.90	200

Classification report on small dataset with user interaction

Classification Report				
	precision	recall	f1-score	support
0	0.94	1.00	0.97	17
1	0.93	0.89	0.91	28
2	0.94	1.00	0.97	16
3	0.84	1.00	0.91	16
4	0.90	0.96	0.93	28
5	0.91	1.00	0.95	20
6	1.00	0.90	0.95	20
7	1.00	0.83	0.91	24
8	0.96	0.77	0.85	30
9	0.76	0.90	0.83	21
accuracy			0.91	220
macro avg	0.92	0.93	0.92	220
weighted avg	0.92	0.91	0.91	220