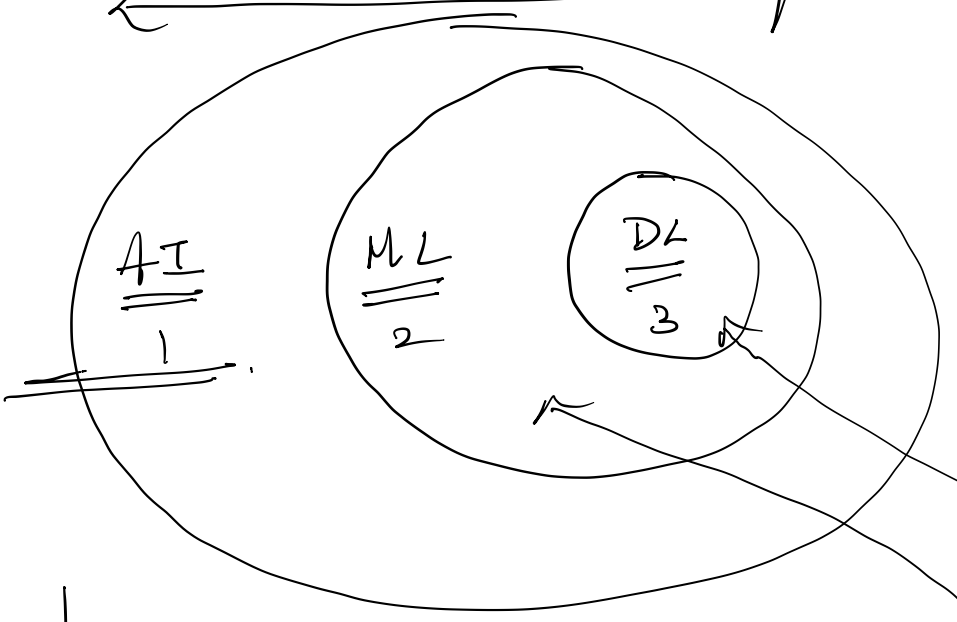
Introduction to Deep Learning: (DL)

Data requirements

Learning
- types of ...
- how it done



→ Differences?

→ features usage & extraction (ML & DL)

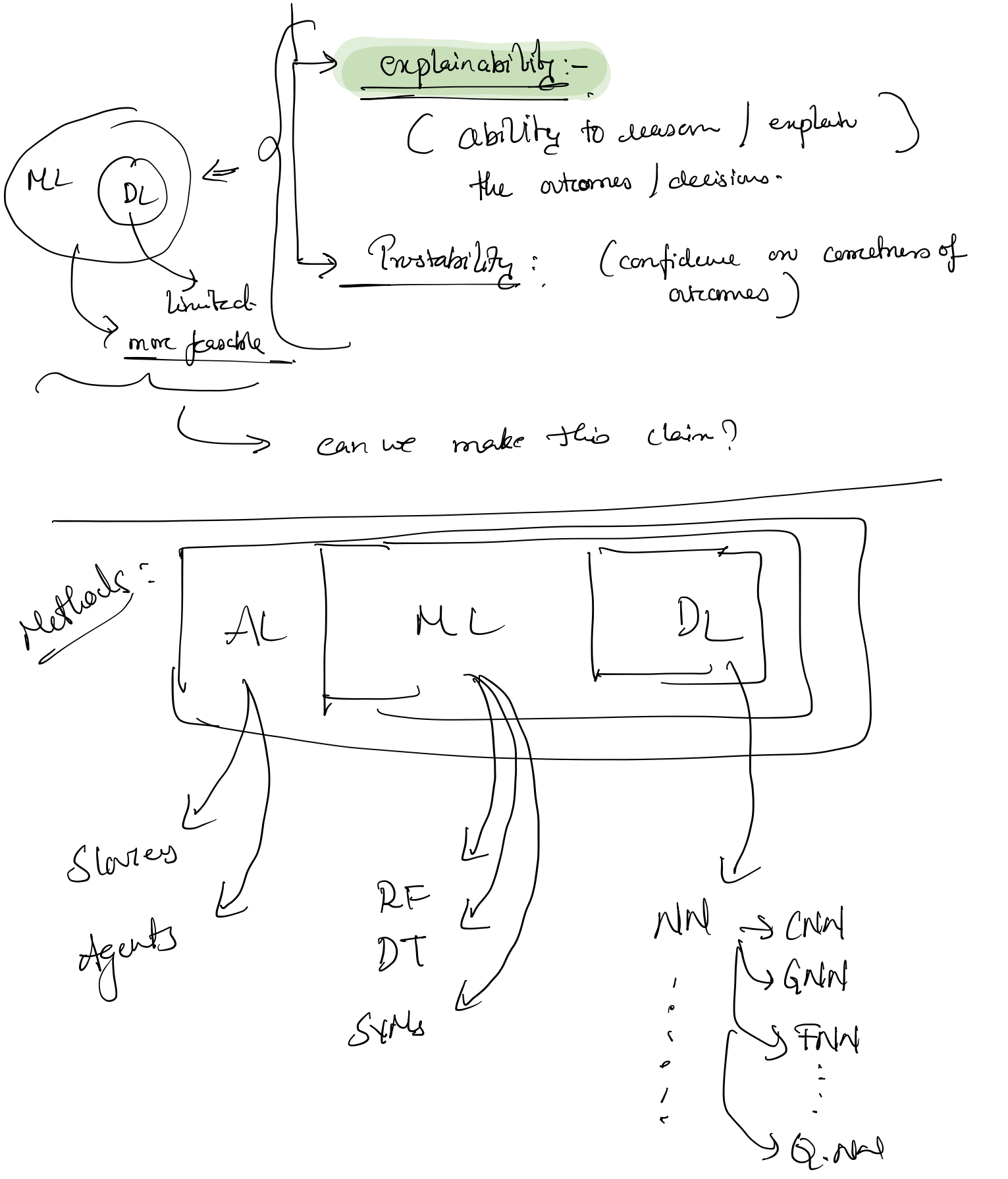
→ Human / Expert

→ automatic

→ ML: Data → Human / Expert
↓
Features (Important)
↓
Model
↓ (Task)
O/p.

→ DL: Data → $\boxed{\text{Model}}$ → O/p.

→ Pipeline:
(from reducing human involvement) → DL ML



What is common b/w AI, ML & DL?

Goal ← → ① Automate human mundane tasks !!

How ← → ② Learning ← Algorithms (methods), Data, Models, Tasks.

Optimization.

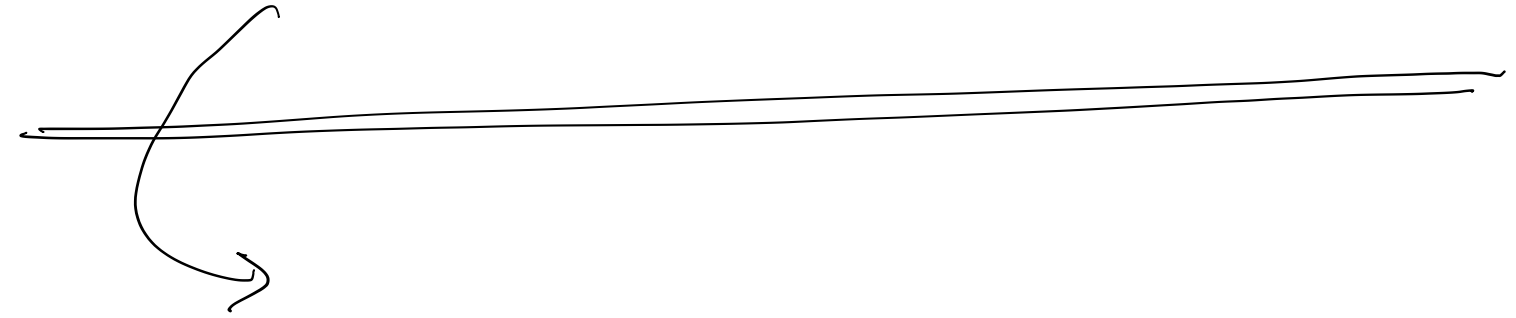
---

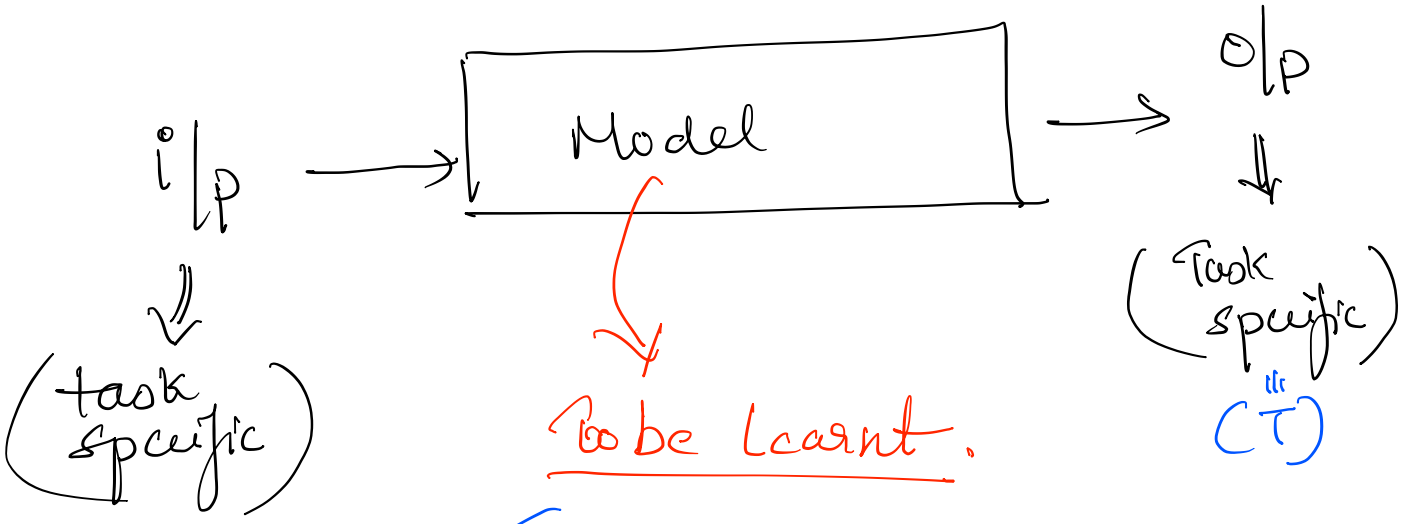
i/p → Model → o/p

i/p ⇓ (task specific)

Model → To be Learnt.

o/p ⇓ (Task specific) (T)





Given T; Learn from experience E with a performance P → ? ?

Learning: optimize (⇒ Learn.) to do T such that P is high based on E

as $E \uparrow \Rightarrow P$ on $T \uparrow$

$\approx \Rightarrow$ as you have more practice $\approx E \uparrow$

$\Downarrow$

$P \uparrow$

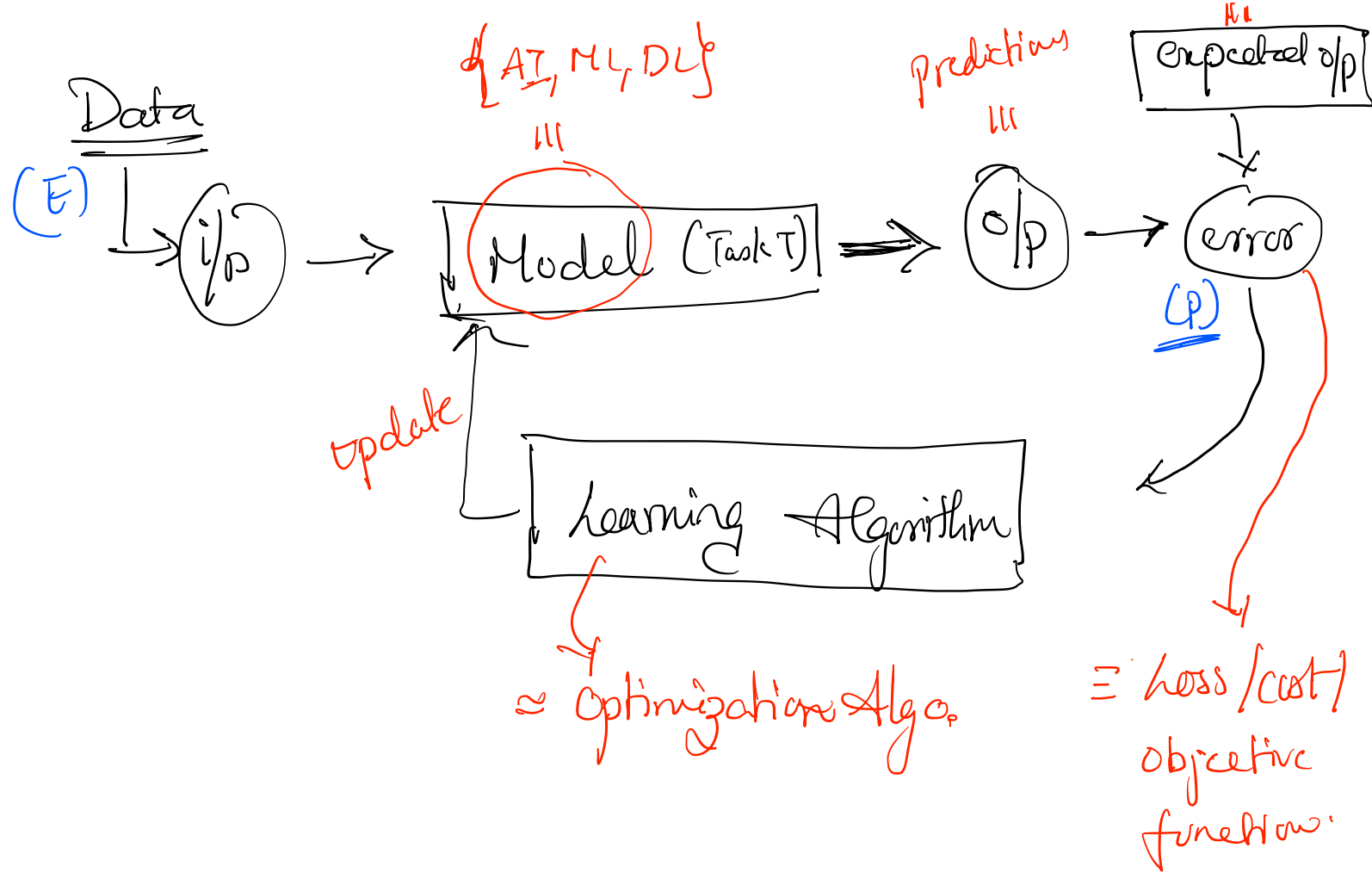
minimum error $\Rightarrow$ Limitations of a model cost its ability to learn / perform the given task T.

found on which data?

(Train data).

Generic Pipeline Overview

Ground Truths.


Data
(E)
i/p
{AI, ML, DL}
Model (Task T)
predictions
o/p
Expected o/p
error
(P)
update
learning Algorithm
≃ Optimization Algo.
≡ loss/cost/objective function.