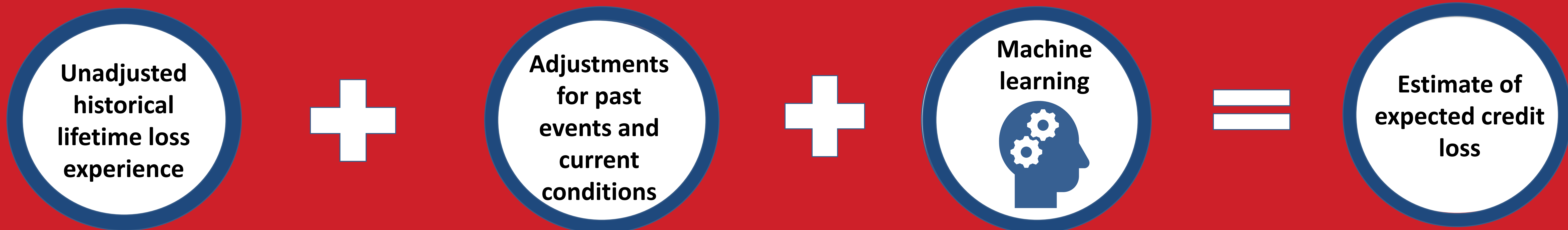


Machine Learning in Credit Risk Modeling

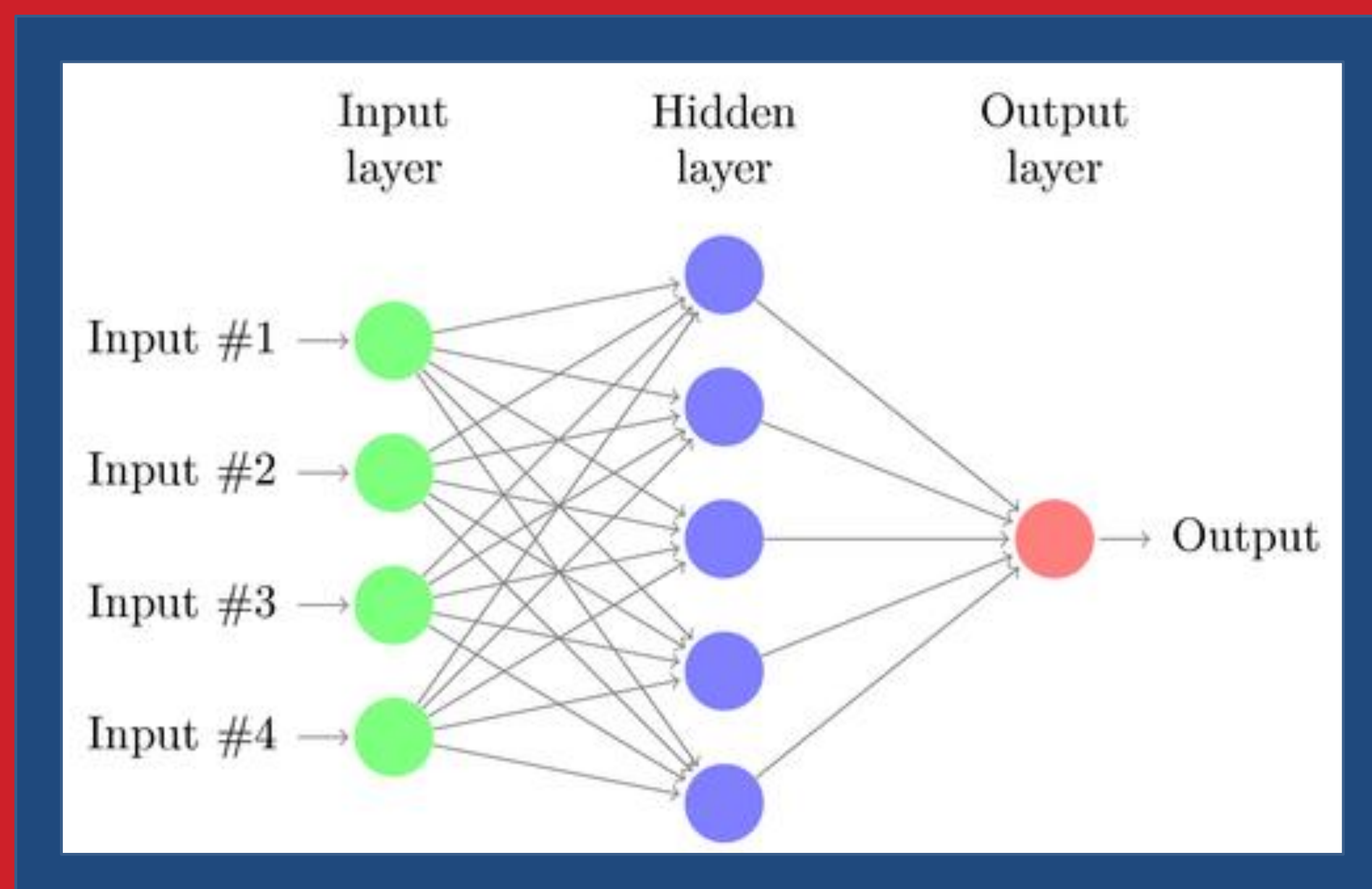


Introduction

- Current accounting standards simply capture the losses in your portfolio, **CECL** methodology intends to capture the **RISK** of your portfolio.
- Machine learning is a method of teaching computers to parse data, learn from it, and then make a determination or prediction regarding new data.
- Machine learning methods provide a better fit for the nonlinear relationships between the explanatory variables and default risk.

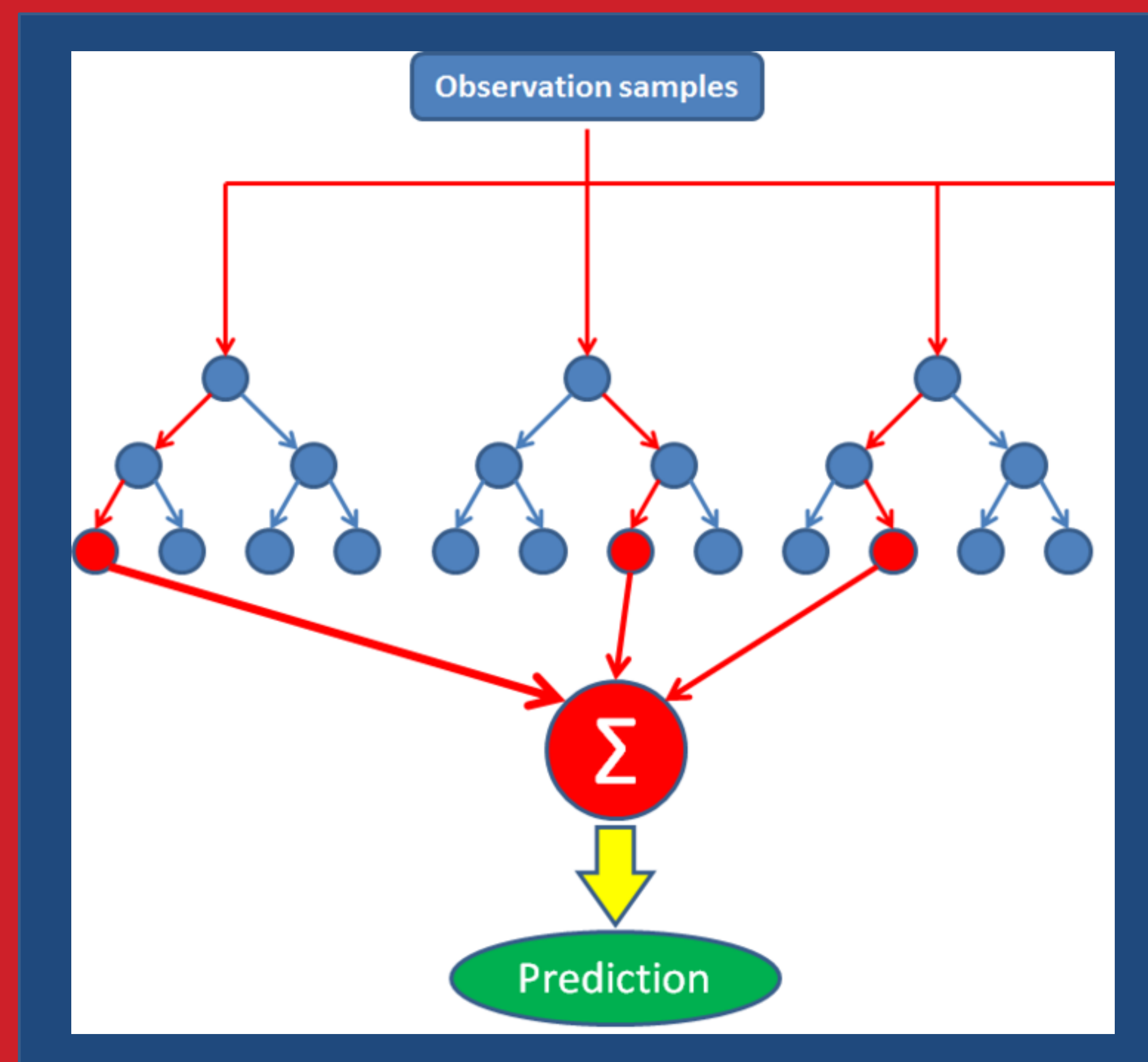
Methodology

ARTIFICIAL NEURAL NETWORKS



System "learns" to perform tasks by observing data without any task-specific rules.

RANDOM FOREST



The random forest approach combines the predictions of many trees, and the final decision is based on the combination of the output of the underlying independent decision trees.

Conclusion

- Machine learning models outperform the benchmark model by 3 - 4%. The accuracy ratio improves by 10 -12 % when we add loan behavioral information, regardless of the modeling approach.
- Include more varied, non-conventional data to further improve and refine approaches to assessing risk.

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