

Apply Machine Learning to Financial Risk Management using IBM Watson

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Introduction:

a. Overview:

Financial institutions need to continually weigh the risks of their transactions, and they determine their risk level through credit scoring. Leading up to the 2008-09 financial crisis, almost all large banks used credit scoring models based on statistical theories; that crisis, largely brought about by underestimating risk, proved the need for better accuracy in their scoring. The combination of increased requirements and the development of advanced new technologies has given rise to a new era: credit scoring financial crisis, almost all large banks used credit scoring models based on statistical theories; that crisis, largely brought about by underestimating risk, proved the need for better accuracy in their scoring.

The combination of increased requirements and the development of advanced new technologies has given rise to a new era: credit scoring using machine learning.

Financial risk management is a function within organizations that aims to detect, manage, and hedge exposure to various risks stemming from use of Financial services. The complexity here is far higher than for individuals because institutions must watch various kinds of future income streams and payment obligations like pensions, and so on. Therefore, financial risk management involves an assessment of various assets

and liabilities in the present as well as in the future
Compared with other sectors,the conflicts of interest are much more distict in the financial sector since the risks are often more abstracts.

b.Purpose:

Financial risk management helps you identify,assess and control threats to your capital,earnings and savings.Financial threats or risks come from a myriad of sources,including financial uncertainty,strategic management errors,legal liabilities,accidents and natural disasters.

2.Literature Survey:

a.Existing Problem:

Financial risk is a type of danger that can result in the loss of capital to interested parties.For governaments,this can mean they are unable to control monetary policy and default on bonds or other debt issues. Every bussiness and organization faces the risk of unexpected,harmful events that can cost the company money or cause it to permanently close.Financial risk management allows organizations to attempt to prepare for the unexpected by minimizing risks and extra costs before they happen.

b.Proposed Solution:

Here we are going to detect the dataset format from

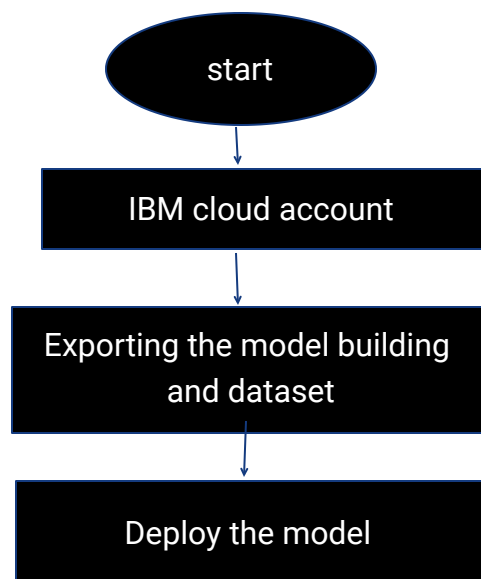
survey in easy format by the IBM service. In IBM cloud by creating watson studio we will get started. After that we will go to catalog and search for machine learning the machine learning status will be activated(created). With the help of model building ,In IBM cloud we will create a new project , by deploying model building on to the IBM and by using machine learning credit scoring is determined.

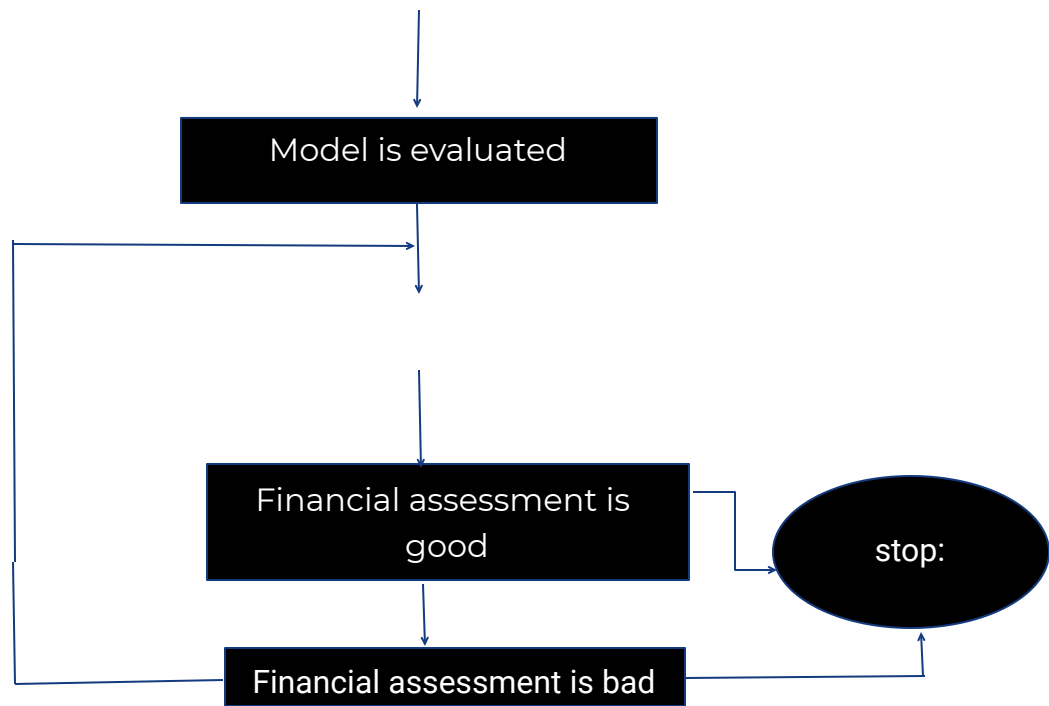
3.Theoretical Analysis:

a.Block diagram:

Diagrammatic overview of the project:

Through block diagram we will Analyse the project.





b. Hardware/Software designing:

IBM Watson machine Learning Accelerator requires the following hardware and software.

Hardware requirements:

The following hardware is supported:

- IBM POWER8 with NVLink and NVIDIA GPU's
- IBM POWER9 with NVLink and NVIDIA GPU's
- x86_64 Servers with P100 and V100 GPU's.

The following tables list the minimum system requirements for running IBM Watson Machine learning Accelerator in a production environment.

Table 1. Minimum hardware requirements

Requirement	Management hosts	Compute hosts

RAM	64GB	32 GB
disk space to extract install files from the WML Accelerator install package	16 GB(First management host only)	NA
diskspace to install IBM spectrum conductor	12 GB	12GB

Software requirements:

The following software is required:

Hardware	Operating System	GPU software
POWER8	Red Hat Enterprise Linux(RHEL)7.6(ppc64le)	CUDA deep Neural Network(7.5) library NVIDIA CUDA 10.1 NVIDIA GPU driver 418.40 NVIDIA NCCL2 2.4 Anaconda 2018.12
POWER9	RHEL 7.6(ppc64le)	CUDA Deep neural Network(cuDNN) 7.5 library NVIDIA CUDA 10.1 NVIDIA GPU driver 418.40 NVIDIA NCCL2 2.4
x86	RHEL7.6	CUDA Deep neural Network(cuDNN)

		7.5 library NVIDIA CUDA 10.1 NVIDIA GPU driver 418.40 Anaconda 2018.12
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4.Experimental Investigations:

Analysis or the investigation made while working on the solution while working on the solution we investigated on the what is Financial risk management,IBM cloud,Watson studio,Machine Learning,exporting the dataset and deployment of model.

Financial risk management:

Financial risk management is the practice of protecting economic value in a firm by using financial instruments to manage exposure to risk:operational risk,credit risk and market risk,foreign exchange risk,shape risk,volatility risk,liquidity risk,inflation risk,busines risk,legal risk,reputational risk etc..

IBM Cloud Account:BM Acquired soft layer,a public cloud platform,to serve as the foundation for its IaaS offering.In October 2016,IBM rolled the soft layer brand under its Blue mix brand of Pa as offering,giving users access to both IaaS and PaaS resources from a single console.IBM cloud provides a full-stack,public,cloud platform,with various products in the catalog,including options for compute,storage,networking,end to end developer solutions for app development,testing and deployment,security databases,and cloud native service.

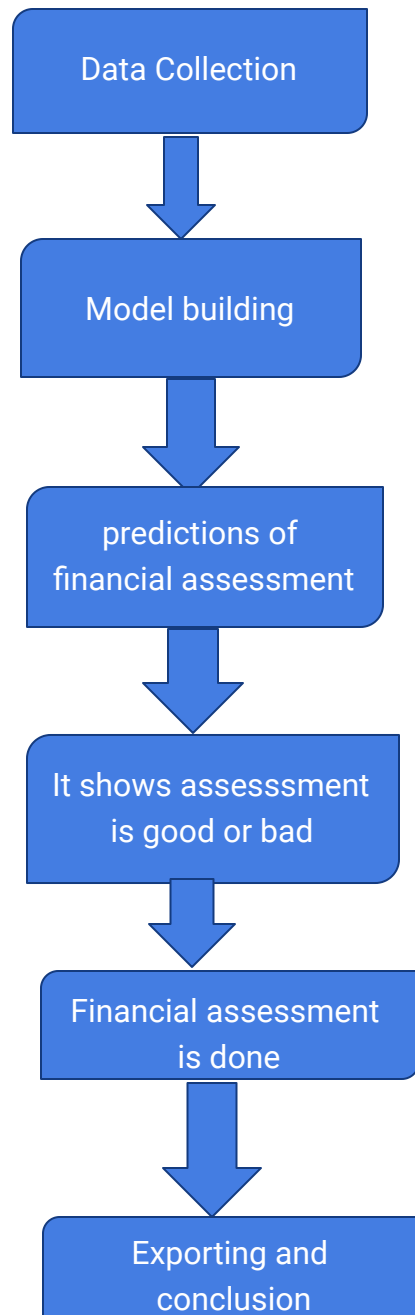
--->dataset is collected

--->Model building is exported to IBM

--->Model is deployed in IBM

5.Flow Chart

Diagram showing the control flow of the solution:

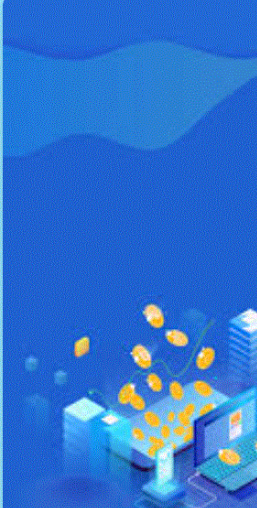


6.Output:

WhatsApp Financial Risk Management +

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FINANCIAL RISK ASSESMENT

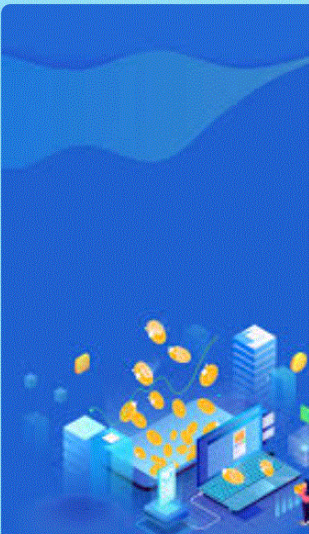
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Rich	Rent
Moderate	Education
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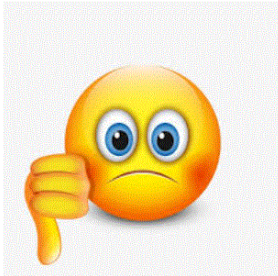
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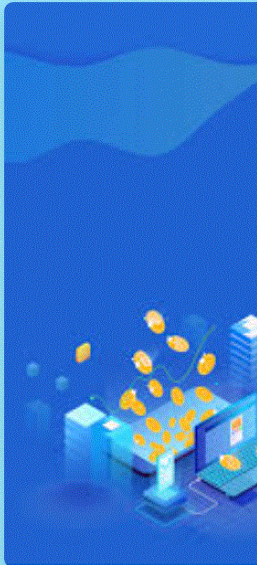
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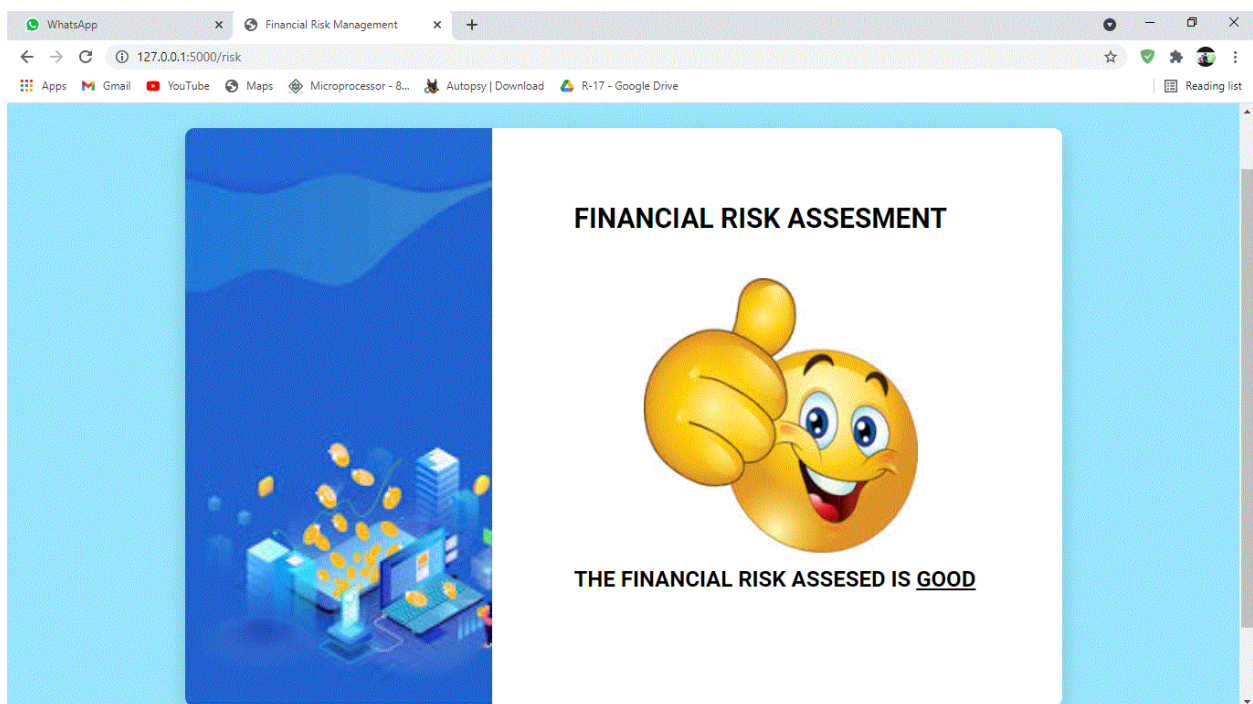
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FINANCIAL RISK ASSESMENT

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Checking Account	Housing
Savings Account	Purpose
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7.Advantages&Disadvantages

Advantage:

The advantage of implementing cloud technology is the speed and flexibility of providing users with the things they need.IBM cloud Private,by being private,gives you much more control and flexibility in the way you set up,configure,and run services.

Disadvantage:

The risk of working with such a large corporation is customer service and support.Due to the volume of help requests,the expert technicians tend to be hard to reach.The cloud can take time to learn,without easy access of support,this time only increases.

8.Applications:

- Complex SQL
- Normalized databases are typically tuned for simple queries
- Aggregate view of data vs transactinal view

9.Conclusion:

The risk analysis process assists the effective and efficient operation of the organisation by identifying those risks which require attention by management.They will need to priorities risk control actions in terms of thei potential to benefit the organisation

10.Future Scope:

-->The short-term future of watson is in the hands of the people,they will be by an app,a website or a robot.IBM Watson is

starting to get in different industries by assisting, complementing or replacing people.

-->The long-term future is uncertain, there are a lot of open source AI platforms that are trying to make the AI ecosystem more healthy, since the governments and big companies around the world don't like the idea of depending too much of their operations on the AI of the big US companies.

11. Bibliography

arp.org/frm?utm_source=bing&utm_medium=cpc&utm_campaign=FRM%20-%20Search%20-%20FRM%20-%20India&utm_term=financial%20risk%20management&utm_content=FRM%20-%20financial%20risk%20management%20-%20BMM