Azure ML Assesment

COGNITIVE MACHINES

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Cognitive Machines

Azure ML Assessment

Developing cognitive products that leverage the recent advancements in Artificial Intelligence can be daunting. We enable small and medium enterprises to harness the power of AI to deliver innovative products in an effective manner. We are a highly motivated and dedicated team which works relentlessly with the clients and customers to ensure that their products become a success story. We help you design and build your future products with the best AI technologies.

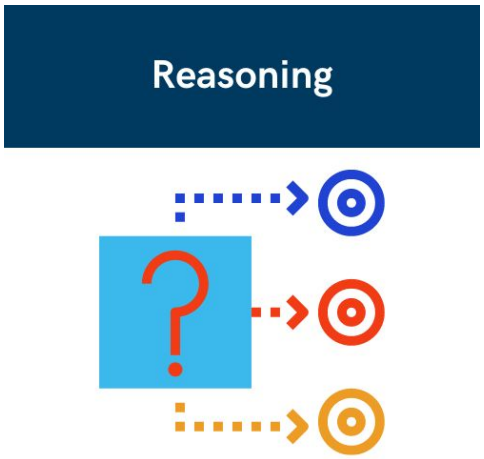
Our Microsoft certified Data Scientists will help you at every stage of your growth. Machine Learning, Computer Vision, Natural Language Processing, Data Science and Analytics are our areas of expertise. We look forward to partnering with you and enabling your business to evolve using AI.

Our approach

Most data centric business problems can be addressed by using an ML technology and drive to a convincing business outcome. At Cognitive Machines, we have formulated 5 main technological approaches for data centric business process transformations

- Business data reasoning technologies
- Business process optimization technologies
- Modern interaction technologies
- Process automation technologies
- Decision making and guidance technologies

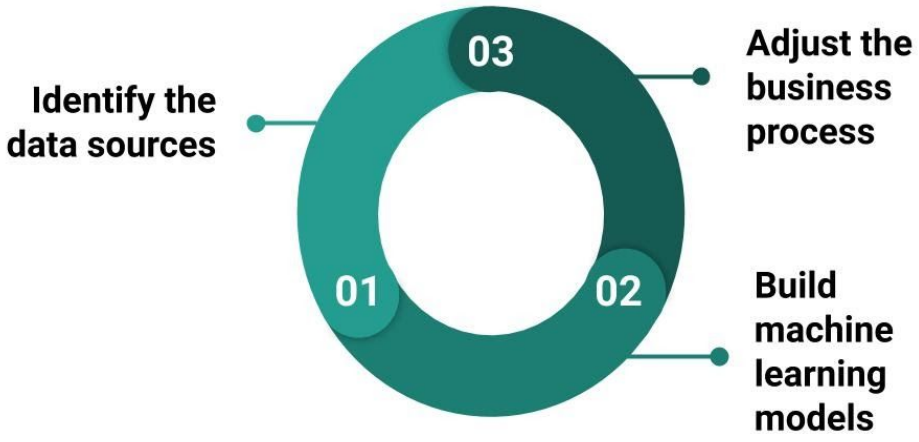
During the course of the assessment, we will listen to your business goals and analyse the feasibility of the problem. We will then identify a suitable AI strategy that could address your business goals and suggest a reference architecture for the AI solution.



AI can help small businesses to form conclusions from structured and unstructured business data. The business data could include data assets like sales records and warehouse inventory records from annual reports and other data stores.

Using these data stores, machine learning models can be built to derive useful insights including

- Identify periods of peak demand
- Forecasting the rate of dissipation of available stock in the inventory
- Accurately plan the timing of purchasing inventory to meet peak demand
- Identify anomalies in demand to streamline the inventory management



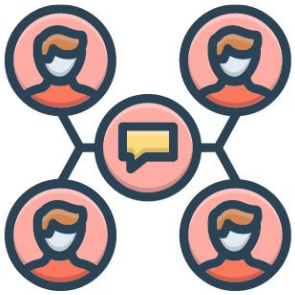
Optimization

Many of the small and medium businesses are plagued by the losses caused due to wastage of business resources. Optimization problems are a class of well-studied use cases in Machine Learning. An optimization problem will have two sides, one side comprising the constraint and another side comprising the required outcome.

As most business problems fall under the category of having constraints and required outcome, Machine Learning is a great fit to solve these problems. An example of optimization would be, minimize the marketing costs while retaining the number of page visits to the web page.

A data-driven decision-making process is always a better alternative to making decisions based on gut feeling. Using AI techniques, decision trees based on data parameters can be modelled. It is commonly agreed to say that a process that is measurable is amenable to improvements. AI-based decision-making systems are by design, measurable, thereby AI-based quantitative approaches to making decisions will deliver better results in the long run.

Interacting



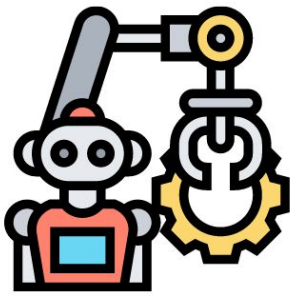
With the connected nature of today's world, we are now used to intelligent answering devices that can understand human voice commands, chatbots that can quickly gather the details from our email conversations and virtual assistants that can manage our productivity tools.

When the same natural interfaces are extended to small businesses, it helps connect with the customers in a more effective manner. The automated interaction agents can be made available 24/7 thereby creating a sense of connectedness with the customers. This aspect of AI is useful to small businesses which are usually strapped for human resources to address the challenges in customer support.

The choices available today that can make small business transform themselves to be a technologically intense version of themselves are

- **Automatic speech recognition** - This is the technology by which users can interact with a computing system using voice commands
- **Speech to text and text to speech conversion** - This is the technology that forms the bridge between the natural voice commands that humans understand and the computer-friendly text-based programs
- **Chatbot** - This is an intelligent software agent in which the users can type certain questions in a natural manner. Using chatbots, the usual form-based input mechanism can be converted into a more natural query-based interface.
- **Intelligent search** - This is the technology by which the information from multi-channel knowledge bases can be gathered in a unified manner.

Automation



Automating business processes via AI can reduce manpower expenditure and increase efficiency by virtue of reduced manual error. The cornerstone of AI is the ability of a machine to learn from the repeated actions of humans and to replicate the action themselves after a sufficient amount of training. Many industries are adopting this approach to automate various processes.

Small manufacturing units are automating the process of inspection/quality control by using computer vision to identify defects. Small robots that can assemble cartons inside a bigger pallet are being used in packaging units. There are certain hazardous industries, where employing human labour is not advisable and can now be automated using rovers and drones. The mechanical nature of the devices lends themselves to be applied to even the harshest of the working conditions. AI technologies like computer vision, deep learning and machine learning enable mechanical automation to be more intelligent.

Next steps in adopting AI

Each of the AI outcomes viz Interacting, Automation, Reasoning, Optimization and Decision Making have different approaches in implementation. The key aspects to consider in adopting an AI outcome are

- Is the training data available to build custom AI models
- Should the changes be reflected on the customer-facing systems or on internal systems
- Who are the technology service providers

	Require internal data	Customer side change	Steps required to achieve outcome
1 Interacting	✗	✓	• Identify the current software ecosystem • Integrate with AI cloud service providers • Build and deploy AI enabled products
2 Automation	✗	✗	• Identify the current software ecosystem • Integrate with RPA cloud service providers • Build and deploy internal AI enabled tools
3 Reasoning, Optimization & Decision Making	✓	✗	• Identify the data sources in the business • Train custom Machine Learning models • Deploy the models on the cloud or in-premise computing resources • Monitor data drift, update model and update models

The AI model should be deployed to a smaller test audience to prove the efficacy of the business outcome. Once proven on a smaller scale, the AI solution can be advocated to wider adoption across the organisation.

The Azure AI technology stack

For businesses interested in adoption AI into their technology stack, there are various choices available. The following is a brief list of technologies tools available at the disposal

- Cloud AI tools
    - Azure Cognitive Services
    - Azure Chatbot
    - Azure LUIS
- Machine learning tools
    - Azure ML Studio
    - Scikit Learn
    - Tensorflow
    - Keras

Summary

Contrary to the popular belief that Artificial Intelligence is a technology that is exclusive to certain industries, the small and medium enterprises stand to gain immensely from this technology. In this handbook, we have elucidated the possibilities and devised a plan of adoption of AI in any small business organization.

Thank you!

We enable small and medium enterprises to harness the power of AI and deliver innovative products in an effective manner. Machine Learning, Computer Vision, Natural Language Processing, Data Science and Analytics are our areas of expertise. We look forward to collaborating with you and enabling your business to evolve using AI.

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