



Artificial Intelligence

Transforming business with Intelligent Insights

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Trends in the industry

Solution adoption and usage metric

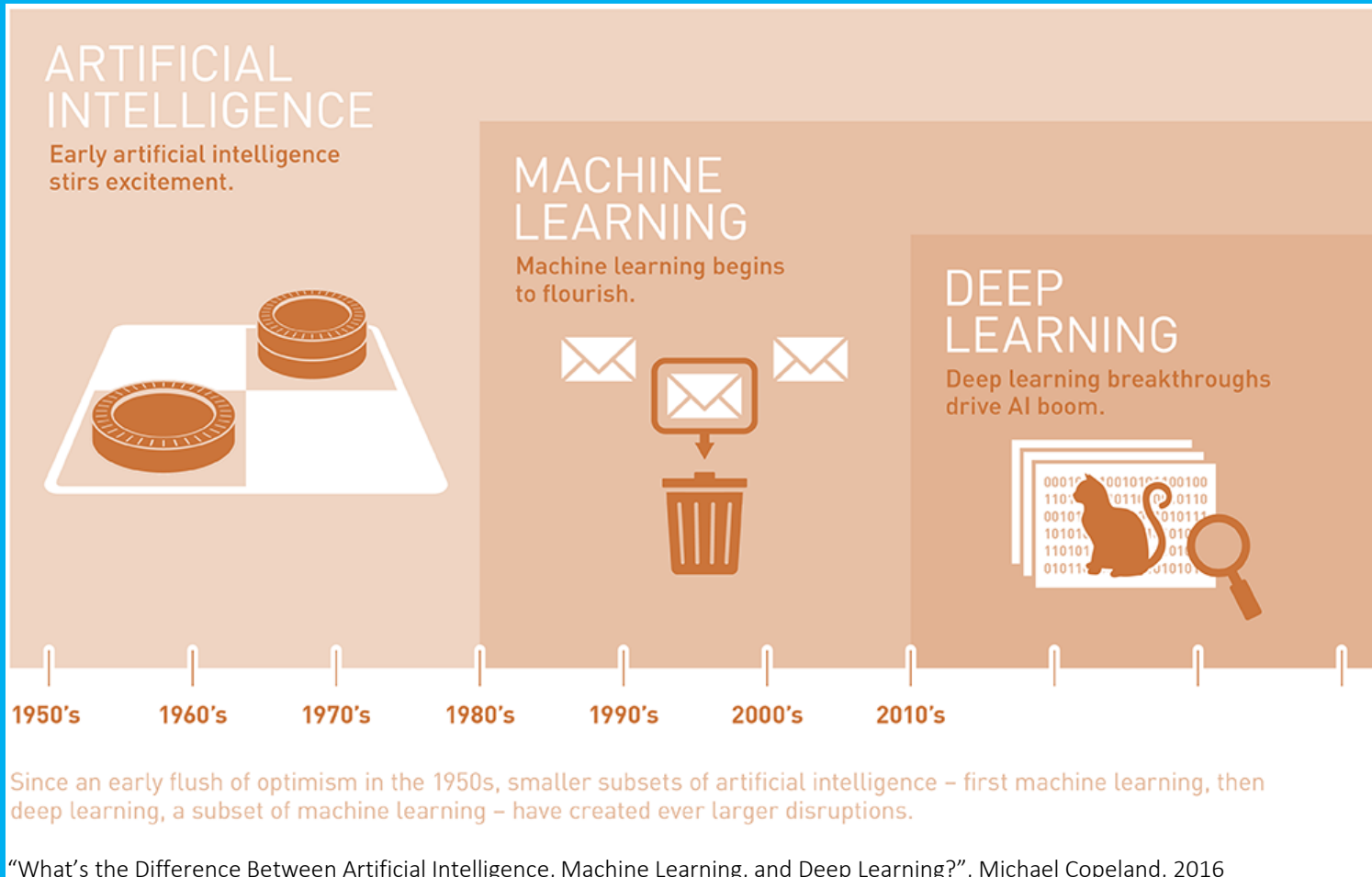
Application Feedback

User Behavior and Path

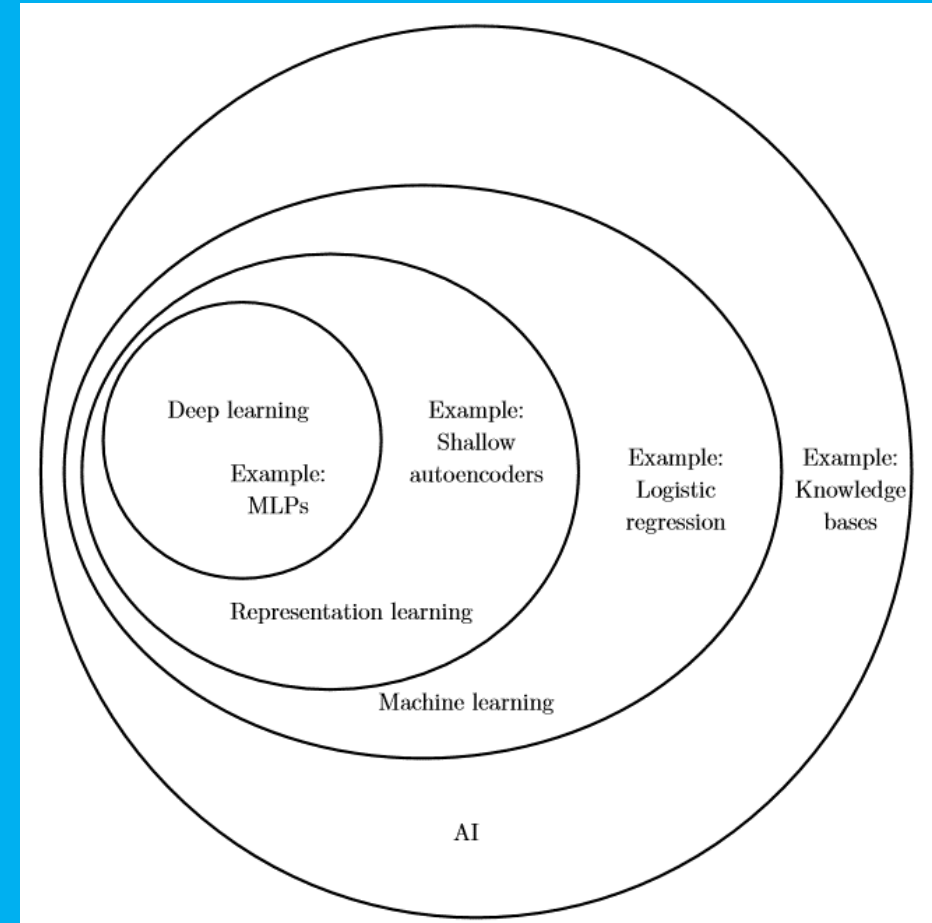
Personalized content

TIME IS NOW

AI, Machine Learning, Deep Learning



“What’s the Difference Between Artificial Intelligence, Machine Learning, and Deep Learning?”, Michael Copeland, 2016



“Deep Learning”, Ian Goodfellow, 2016

Microsoft AI

For every person and every organization



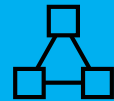
Agent



Applications



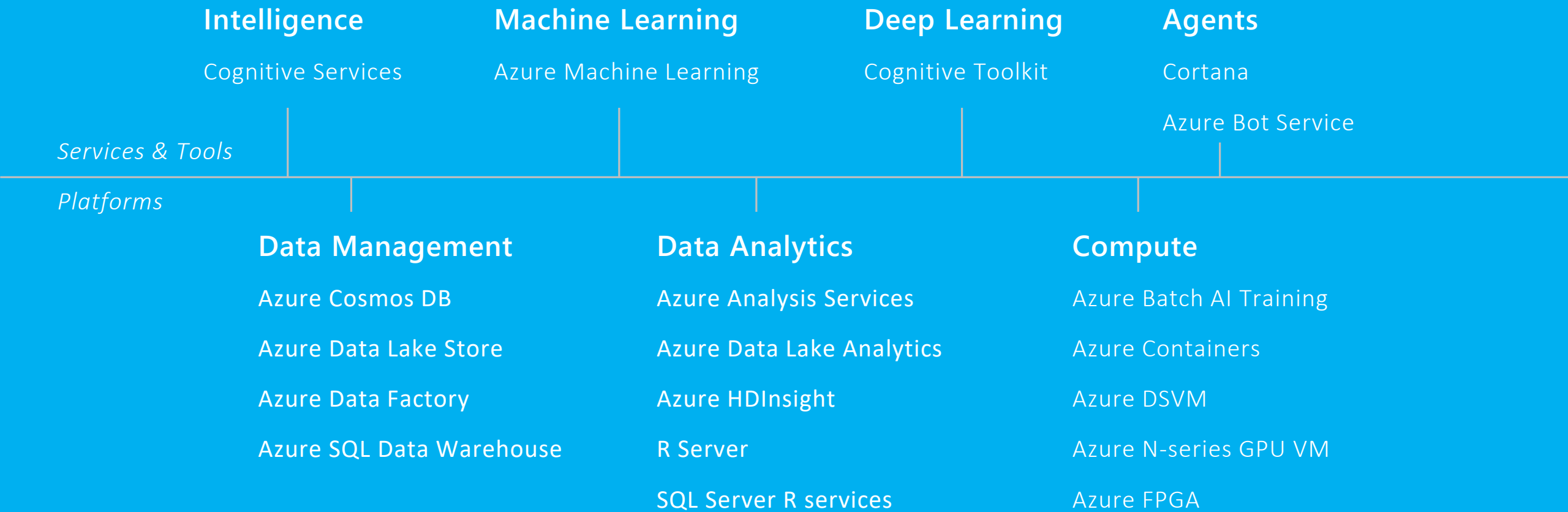
Services



Infrastructure

We can help

Microsoft technologies you can use to build AI



Azure Machine Learning

Fully managed cloud service for building predictive analytics models

The screenshot displays the Microsoft Azure Machine Learning Studio interface. The top navigation bar includes "Microsoft Azure Machine Learning", "Home", "Studio", and "Gallery". The main workspace is titled "Prediction [Scoring Exp.]" and is in "Draft" status, with a draft saved at 10:51:01 AM. The interface is divided into a left-hand navigation pane and a central workspace.

Left-hand navigation pane:

- Search experiment items
- Saved Datasets
- Trained Models
- Transforms
- Data Format Conversions
- Data Input and Output
- Data Transformation
 - Filter
 - Learning with Counts
 - Build Count Table
 - Count Featurizer
 - Manipulation
 - Sample and Split
 - Scale and Reduce
 - Feature Selection
- Machine Learning
 - Evaluate
 - Initialize Model
 - Anomaly Detection
 - One-Class Support V...
 - PCA-Based Anomaly...
 - Classification
 - Clustering
 - Regression
 - Score
 - Train
- OpenCV Library Modules
- Python Language Modules
- R Language Modules
- Statistical Functions
- Text Analytics
- Deprecated
- Web Service

Central workspace (Scoring experiment):

The workflow is titled "Prediction [Scoring Exp.]" and is in draft status. It consists of the following steps:

- Contributions view** (initial step)
- Metadata Editor** (checked)
- Project Columns** (Select CPI, Trade Balance, DOW only) (checked)
- Enter Data** (Add GDP index) (checked)
- Project Columns** (Add CPI lag and Trade Balance Lag) (checked)
- Add Columns** (Merge CPI, Dow, with GDP) (checked)
- Add Columns** (Add lag indicators) (checked)
- Project Columns** (Remove "recession" columns as that is being predicted here) (checked)
- Web service input** (input node)
- RecessionPredictionNormaliz...** (intermediate node)
- Apply Transformation** (Apply trained normalization transform to numerics) (checked)
- Recession Prediction (trained ...)** (intermediate node)
- Score Model** (Predict test data using trained model) (checked)
- Web service output** (output node)

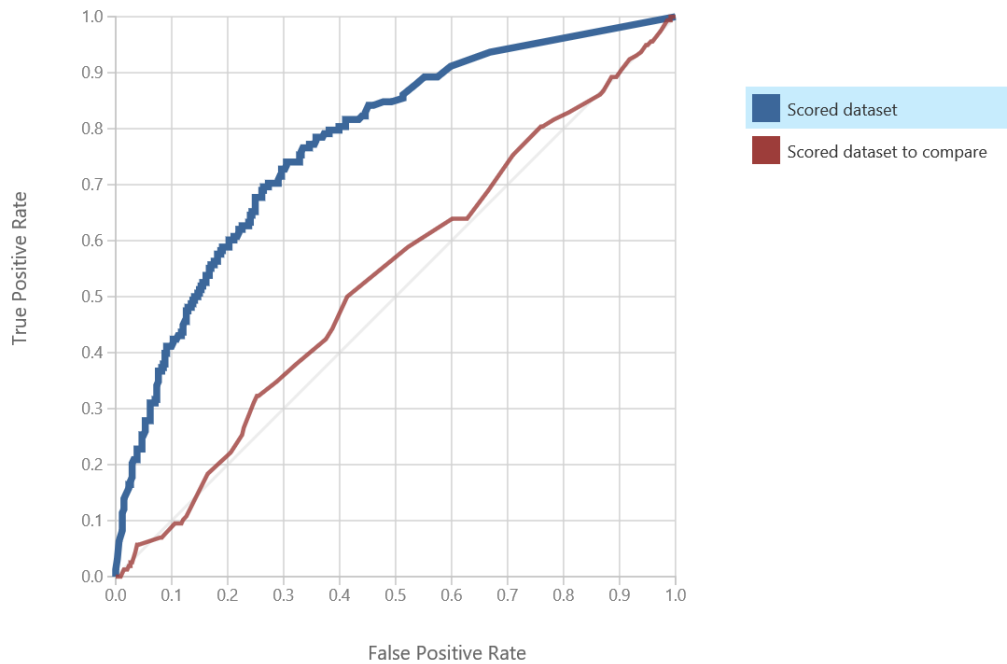
The bottom of the interface features a toolbar with icons for "NEW", "WWW.BLUETOOTH", "SAVE", "SAVE AS", "DELETE/REMOVE", "REFRESH", "VIEW LOG", "RUN", "PUBLISH AND SHARE", "TRAINING HISTORY", and "CREATE NEW EXPERIMENT".

Designing a solution using Azure ML

Train, evaluate, and score the model

Credit Risk Experiment > Evaluate Model > Evaluation results

ROC PRECISION/RECALL LIFT



True Positive	False Negative	Accuracy	Precision	Threshold	AUC
440	350	0.638	0.882	0.5	0.772
False Positive	True Negative	Recall	F1 Score		
59	282	0.557	0.683		
Positive Label	Negative Label				
2	1				

Score Bin	Positive Examples	Negative Examples	Fraction Above Threshold	Accuracy	F1 Score	Precision	Recall	Negative Precision	Negative Recall	Cumulative AUC
(0.900,1.000]	260	25	0.252	0.509	0.484	0.912	0.329	0.374	0.927	0.015
(0.800,0.900]	70	10	0.323	0.562	0.571	0.904	0.418	0.399	0.897	0.026
(0.700,0.800]	50	10	0.376	0.598	0.626	0.894	0.481	0.419	0.868	0.039
(0.600,0.700]	25	7	0.404	0.614	0.650	0.886	0.513	0.429	0.848	0.049
(0.500,0.600]	35	7	0.441	0.638	0.683	0.882	0.557	0.446	0.827	0.060
(0.400,0.500]	25	6	0.469	0.655	0.705	0.877	0.589	0.459	0.809	0.070
(0.300,0.400]	30	15	0.508	0.668	0.725	0.861	0.627	0.469	0.765	0.097
(0.200,0.300]	50	9	0.561	0.705	0.765	0.860	0.690	0.507	0.739	0.114
(0.100,0.200]	40	18	0.612	0.724	0.789	0.845	0.741	0.533	0.686	0.152
(0.000,0.100]	205	234	1.000	0.698	0.822	0.698	1.000	1.000	0.000	0.772

Microsoft Cognitive Services

Infuse intelligence into your applications



Vision

Computer Vision API
Content Moderator
Custom Vision Service
Emotion API
Face API
Video API
Video Indexer



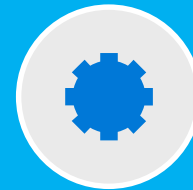
Speech

Bing Speech API
Custom Speech Service
Speaker Recognition API
Translator Speech API



Language

Language Understanding
Intelligent Service
Web Language Model API
Bing Spell Check API
Linguistics Analysis API
Text Analytics API
Translator Text API



Knowledge

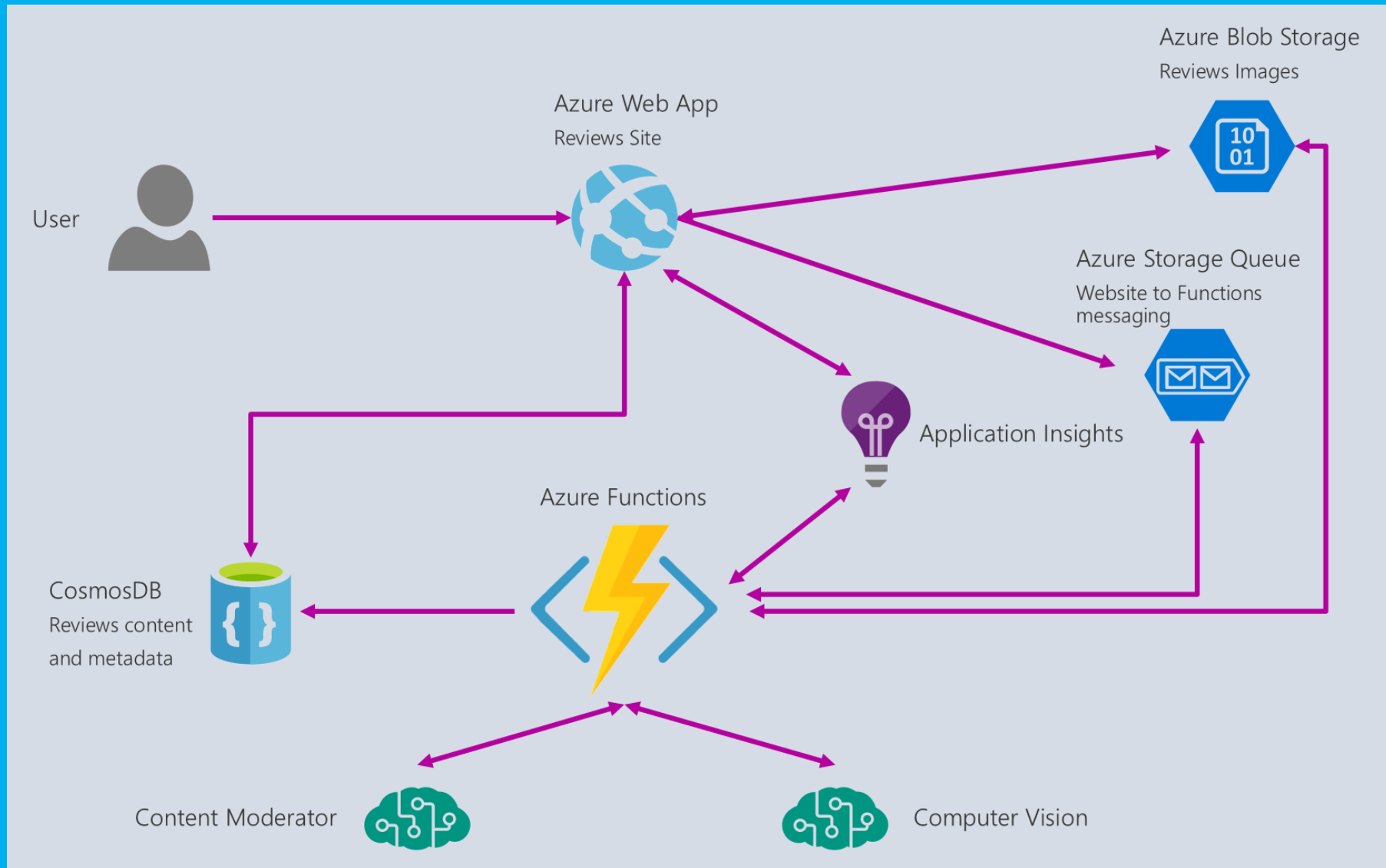
Academic Knowledge API
Custom Decision Service
Entity Linking Intelligent
Service API
Knowledge Exploration
Service
QnA Maker API
Recommendations API



Search

Bing Autosuggest API
Bing Custom Search
Bing Image Search API
Bing News Search API
Bing Video Search API
Bing Web Search API
Bing Entity Search API

Sample application architecture





GOOD HEALTH, EXTENDED FOR THE RIGHT CARE AT THE RIGHT TIME

A healthcare advanced analytics company working collaboratively across domains to convert data into actionable insights, and further provide best-in-class possible outcomes for each of those insights

- Enhance Patient outcomes through Data & Predictive Analytics
- 95% Accurate Readmission Predictions
- Runs custom ML algorithms on Azure

<http://www.Enlightiks.com/>



Grocery item object detection and recognition

LIEBHERR





Thank you!