

# SMES: UNLOCK THE POTENTIAL FOR AI & ML

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# AGENDA

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**WHAT IS AI/ML AND DEEP LEARNING?**

2

**AI STATUS IN SMES AND ENTERPRISES**

3

**HOW TO START USING AI IN YOUR BUSINESS**

4

**AI ON AMAZON WEB SERVICES**

# 1

## WHAT IS ARTIFICIAL INTELLIGENCE ?

“

AI: A system or service which can perform tasks that usually require human intelligence

John Mc Carthy,  
AI "Founding Father"

”



# ARTIFICIAL DOES NOT EXIST, AND MAY NEVER EXIST INTELLIGENCE

Early artificial intelligence stirs excitement.



# MACHINE LEARNING IS A LOGICAL CONTRADICTION AND LOGICALLY IMPOSSIBLE, THUS NONSENSE

Machine learning begins to flourish.



# DEEP LEARNING IS ALSO NOT LEARNING

Deep learning breakthroughs drive AI boom.



# KEY AI TERMINOLOGY

## ARTIFICIAL INTELLIGENCE

A system or service which can perform tasks that usually require human intelligence

## MACHINE LEARNING

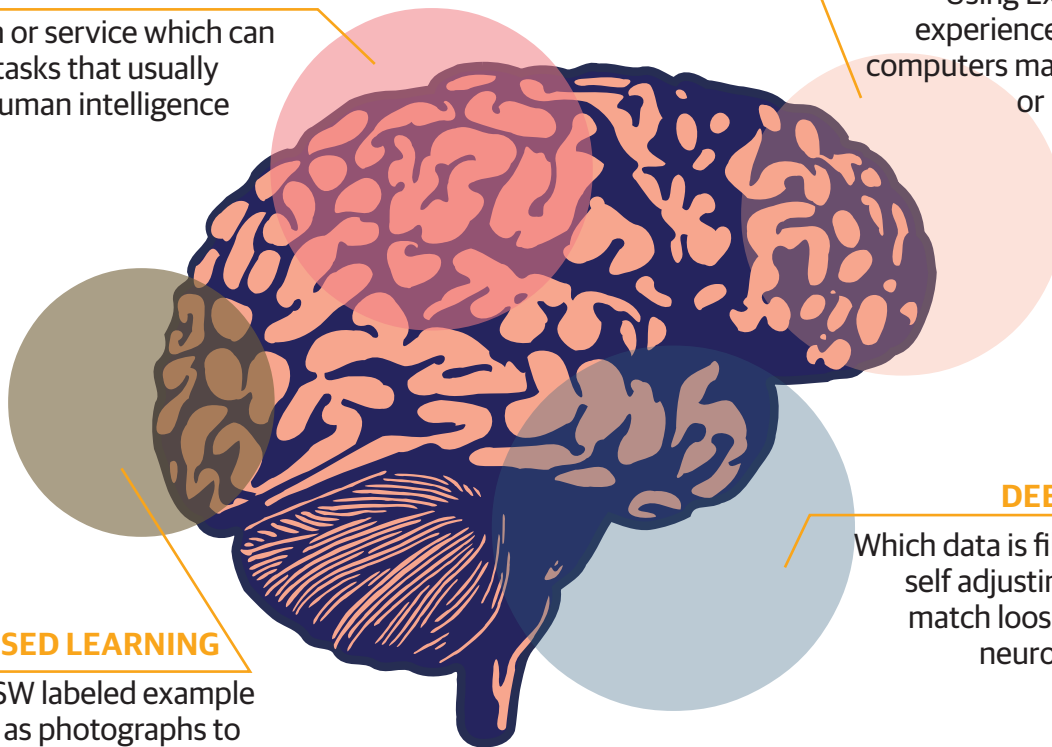
Using Example Data or experience to refine how computers make predictions or perform a task

## DEEP LEARNING

Which data is filtered through self adjusting networks of match loosely inspired by neurons in the brain

## SUPERVISED LEARNING

Showing SW labeled example data such as photographs to teach computer what do do



# MOMENTS THAT SHAPED AI

## 1965

MIT creates Eliza, the first chatbot, which poses as a psychotherapist

## 1975

Stanford develop Meta-Dendral, a program to interpret chemical analyses, makes the first discoveries by a computer

## 1987

Mercedes Van fitted with computers drives itself 20 km on highway in an academic project led by engineer E. Dickmanns

## 1997

IBM's computer Deep Blue defeats chess world champion G. Kasparov

## 2004

The Pentagon stages the Darpa Grand Challenge, a race for robot cars in the Desert that catalyzes the autonomous car industry

# MOMENTS THAT SHAPED AI

2016 IN TWO MOVES, ALPHAGO AND LEE SEDOL REDEFINED THE FUTURE

“ Chess is a metaphor for war,  
but it's really just a single battle.  
Go is like a global battlespace. ”





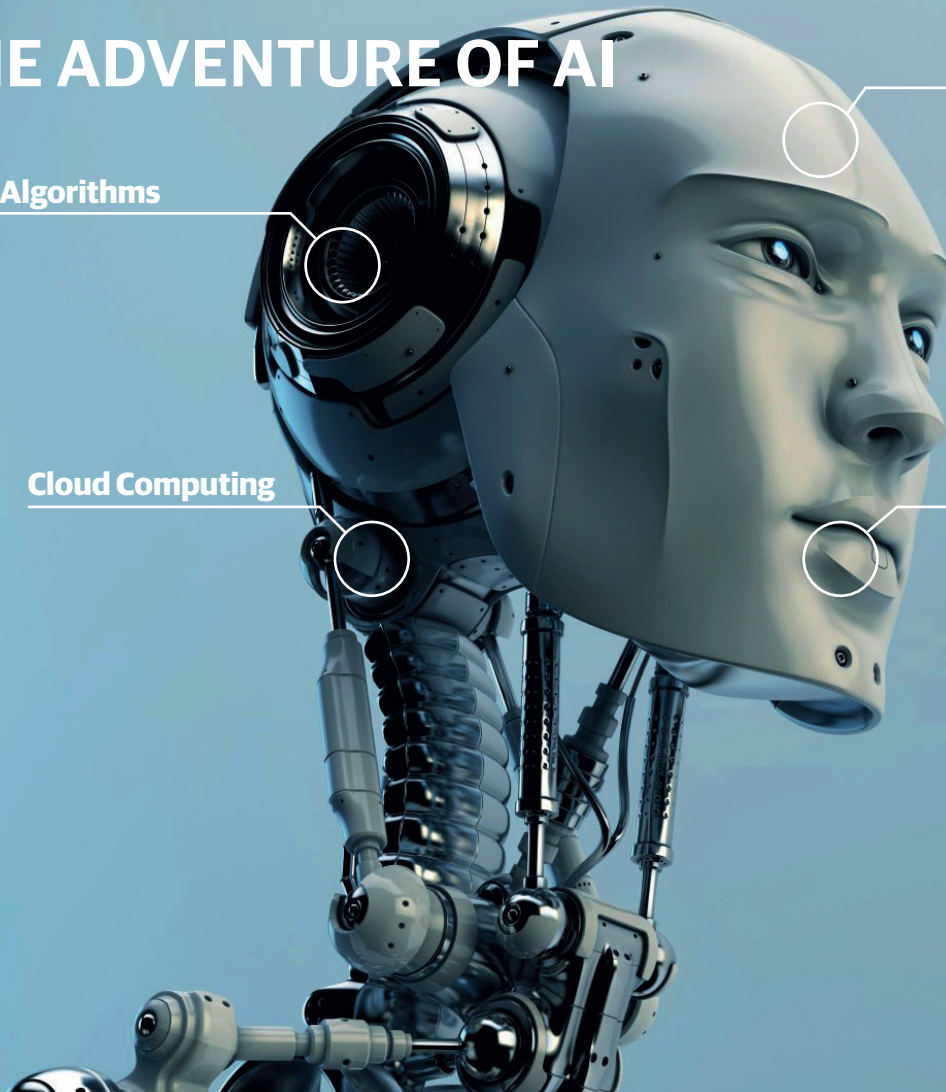
# THE ADVENTURE OF AI

Algorithms

Data

Cloud Computing

GPUs & Acceleration





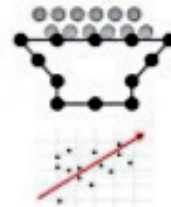
# ML SUPERVISED LEARNING ALGORITHMS



Binary classification  
(Logistic regression)



Multi-category classification  
(Multinomial logistic regression)



Regression  
(Linear regression)

# ML USE-CASES



## FRAUD DETECTION

Detecting fraudulent transactions, filtering spam emails, flagging suspicious reviews,



## PERSONALIZATION

Recommending content, predictive content loading, improving user experience, ...



## TARGETED MARKETING

Matching customers and offers, choosing marketing campaigns, cross-selling and up-selling,...



## CONTENT CLASSIFICATION

Categorizing documents, matching hiring managers and resumes



## CHURN PREDICTION

Finding customers who are likely to stop using the service, free-tier upgrade targeting, ...



## CUSTOMER SUPPORT

Predictive routing of customer emails, social media listening, ...

# DEEP LEARNING-BASED IMAGE & VIDEO ANALYSIS

SEARCH, VERIFY, ORGANIZE MILLIONS OF IMAGES (AMAZON REKOGNITION...)



Object  
& Scene detection



Facial Analysis



Face Comparison



Face Recognition

# 2

## AI STATUS IN SMES AND ENTERPRISES

# 80% OF ENTERPRISE AND EXECUTIVES SAY AI MAKES WORKERS MORE PRODUCTIVE AND CREATES JOBS



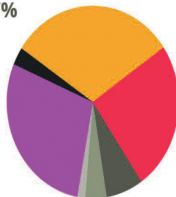
## 80%

OF ENTERPRISE EXECUTIVES SAY AI MAKES WORKERS MORE PRODUCTIVE AND CREATES JOBS

**ONLY 15%** BELIEVE ARTIFICIAL INTELLIGENCE ELIMINATES JOBS

## ENTERPRISE LEADERS DEFINE AI AS TECHNOLOGY THAT

- Thinks and acts like humans - 31%
- Can learn to do things better over time - 25%
- Can understand language - 7%
- Can answer questions - 4%
- Passes the Turing test - 1.5%
- All of the above - 28.5%
- Other - 3%



The highest percentage (29%) of respondents named **PREDICTIVE ANALYTICS** as the **top priority** they think their organizations could address with **AI-POWERED SOLUTIONS**

## THE PRIMARY REASON ENTERPRISES CURRENTLY USE AI IS FOR:

**48.5%: Automated communications** that give **business audiences** data they can use to make effective business decisions

**13.6%: Automated communications** that give **consumer audiences** data they can use to make effective decisions

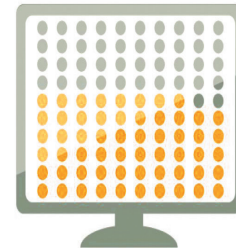
**6.1%: Automation** that eliminates manual and repetitive tasks

**4.6%: Monitoring and alerts** about the health of the business

**4.6%: Automated data-driven reporting**

**19.6%: All of the above**

**3%: Other**



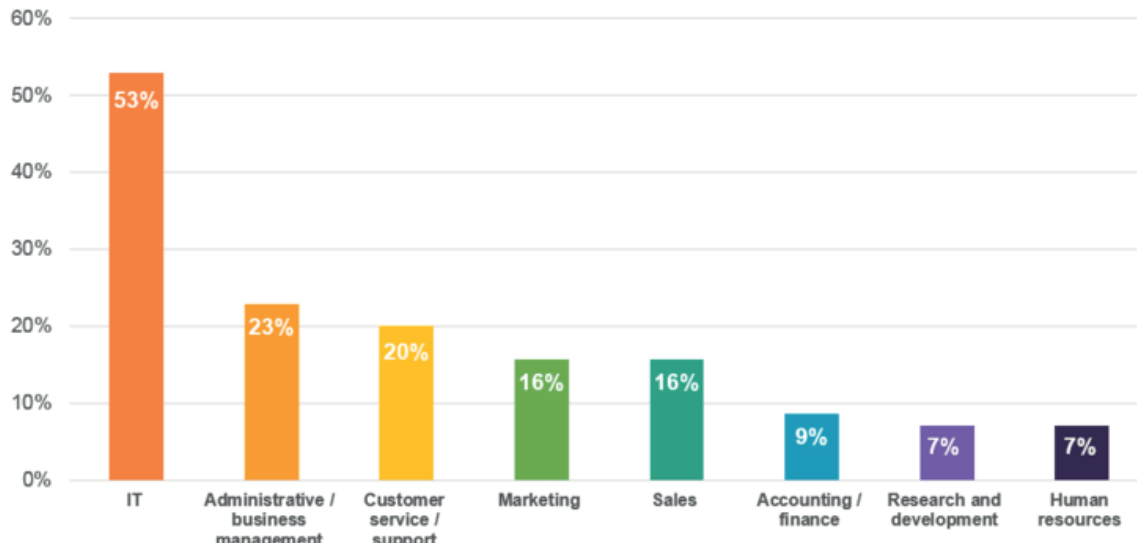
## 57.9%

OF BUSINESSES WITH BIG DATA TECH HAVE AI SOLUTIONS DEPLOYED

# WHERE ARE THE SMES ?

## Departments Utilizing Intelligent Assistants / Chatbots to Support Their Tasks

*Among organizations currently using intelligent assistants / chatbots*





# WHERE ARE THE SMES ?

## Most Common Tasks Supported by Intelligent Assistants / Chatbots in Organizations

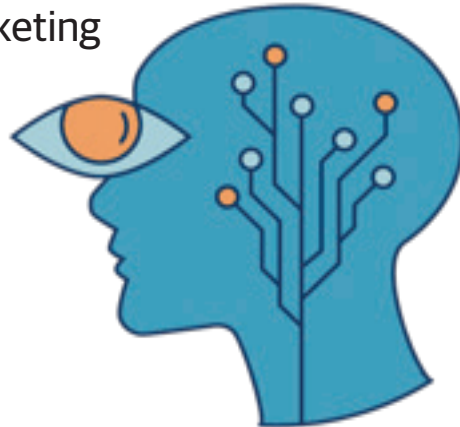
*Among organizations currently using intelligent assistants / chatbots*



# SMES AND AI : KEY OBSTACLES 2018

SMALL AND MEDIUM-SIZED ENTERPRISES (SMES) MAY ENCOUNTER DIFFICULTY ADAPTING TO THE NEW PARADIGMS OF THE BIG DATA ECONOMY:

- The lack of integrated digital strategy
- Disconnection from the cloud (on premises)
- Non-collaborative business models (customers, suppliers, start-up)
- Lack of knowledge of AI and marketing



# 3

## HOW TO START USING AI IN YOUR BUSINESS

# SMES AND AI: HOW TO START?



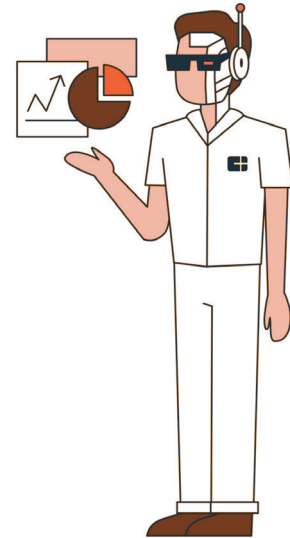
## TECHNOLOGY

Leverage cloud computing solutions without significant investments in technology and personnel



## PEOPLE

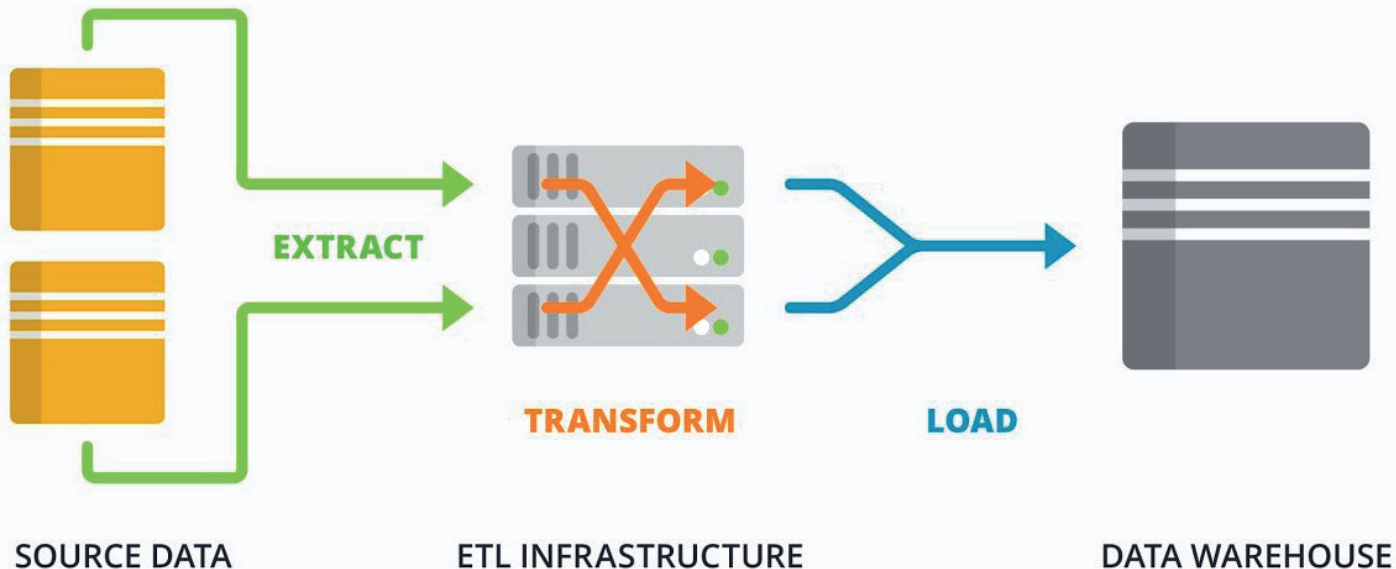
Commitment to developing and building an intelligent business must come from leaders & owners



## DATA

Access & Built, Converge, Monetize (identify opportunities, savings)

# TO EFFECTIVELY USE AI, SMES FIRST NEED ACCESS TO BIG SETS OF DATA



# 4

## AI ON AMAZON WEB SERVICES



# ACCESS AI THROUGH AMAZON PLATFORM

WITH THOUSANDS OF EMPLOYEES ACROSS THE COMPANY FOCUSED ON AI



Discovery  
& Search



Fulfillment  
& Logistics



Enhance  
Existing Products



Define New  
Categories Of  
Products



Bring Machine  
Learning To All

# AMAZON AI ECOSYSTEM

## AI SERVICES



AMAZON  
REKOGNITION  
IMAGE RECOGNITION



AMAZON  
POLLY  
TEXT-TO-SPEECH



AMAZON LEX  
VOICE AND TEXT  
CHATBOTS

## AI PLATFORMS



AMAZON  
MACHINE  
LEARNING



AMAZON  
EMR



SPARK &  
SPARKML

## AI FRAMEWORKS

AWS DEEP LEARNING AMI

APACHE  
MXNET

TENSOR-  
FLOW

CAFFE

TORCH

THEANO

CNTK

KERAS

## AI INFRASTRUCTURE

AMAZON EC2 P2  
AND G2 GPUS

AMAZON EC2  
CPUS

AWS LAMBDA

ENHANCED  
NETWORKING

AWS IOT AND  
AWS GREENGRASS

# AMAZON AI SERVICES AWS PLATFORM



## POLLY

Life-like speech



## REKOGNITION

Image Analysis



## LEX

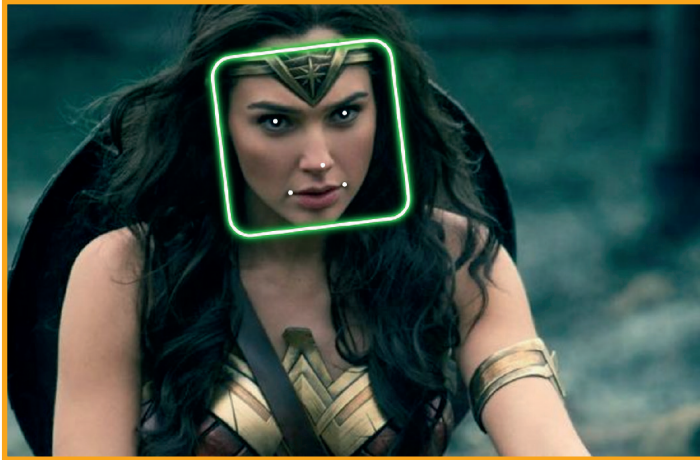
Conversational Engine



## DEEP LEARNING FRAMEWORKS

MXNet, TensorFlow,  
Theano, Caffe, Torch

# RECOGNITION: IMAGE ANALYSIS



- Dynamic, personalized ads
- Capture user demographics and sentiment
- Avoid faces when cropping images and overlaying ads
- Recommend the best photos
- Improve online dating match recommendations

## ▼ Results



looks like a face	99.9%
appears to be female	100%
age range	27 - 44 years old
not smiling	86.4%
not wearing glasses	78.8%
not wearing sunglasses	98.3%
eyes are open	99.8%
mouth is closed	99.7%
does not have a mustache	99.8%
does not have a beard	99.9%

# POLLY: LIFE-LIKE SPEECH SERVICE



**CONVERTS TEXT  
TO LIFE-LIKE  
SPEECH**



**FULLY  
MANAGED**



**47 VOICES**



**24 LANGUAGES**



**LOW LATENCY,  
REAL TIME**

## **VOICE QUALITY & PRONUNCIATION**

- 1/ Automatic, Accurate Text Processing
- 2/ Intelligible and Easy to Understand
- 3/ Add Semantic Meaning to Text
- 4/ Customized Pronunciation

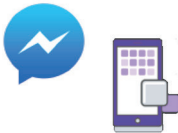


**ARTICLES AND BLOGS  
TRAINING MATERIAL  
CHATBOTS (LEX)PUBLIC  
ANNOUNCEMENTS**

# LEX: CONVERSATIONAL INTERACTIONS



**TEXT AND SPEECH LANGUAGE UNDERSTANDING:  
POWERED BY THE SAME TECHNOLOGY AS ALEXA**



**DEPLOYMENT TO CHAT SERVICES**



**DESIGNED FOR BUILDERS: EFFICIENT AND INTUITIVE TOOLS  
TO BUILD CONVERSATIONS; SCALES AUTOMATICALLY**



**VERSIONING AND ALIAS SUPPORT**



**ENTERPRISE SAAS CONNECTORS:  
CONNECT TO ENTERPRISE SYSTEMS**



# LEX: USE CASES FOR SMES



## INFORMATIONAL BOTS

Chatbots for everyday consumer requests



## APPLICATION BOTS

Build powerful interfaces to mobile applications



## ENTERPRISE PRODUCTIVITY BOTS

Streamline enterprise work activities and improve efficiencies



## INTERNET OF THINGS (IOT) BOTS

Enable conversational interfaces for device interactions

- News updates
- Weather info
- Game scores ...

- Book tickets
- Order food
- Manage bank accounts

- Check sales numbers
- Marketing performance
- Inventory status ...

- Wearables
- Appliances
- Auto ...

# "VIETNAM SMES: GET ON BOARD!"

DORON SHACHAR CEO RENOVA CLOUD

