

Impacto de serviços na nuvem no desenvolvimento de Sistemas Inteligentes

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Cognitive Projects by Type

We studied 152 cognitive technology projects and found that they fell into three categories.

ROBOTICS & COGNITIVE AUTOMATION

71

COGNITIVE INSIGHT

57

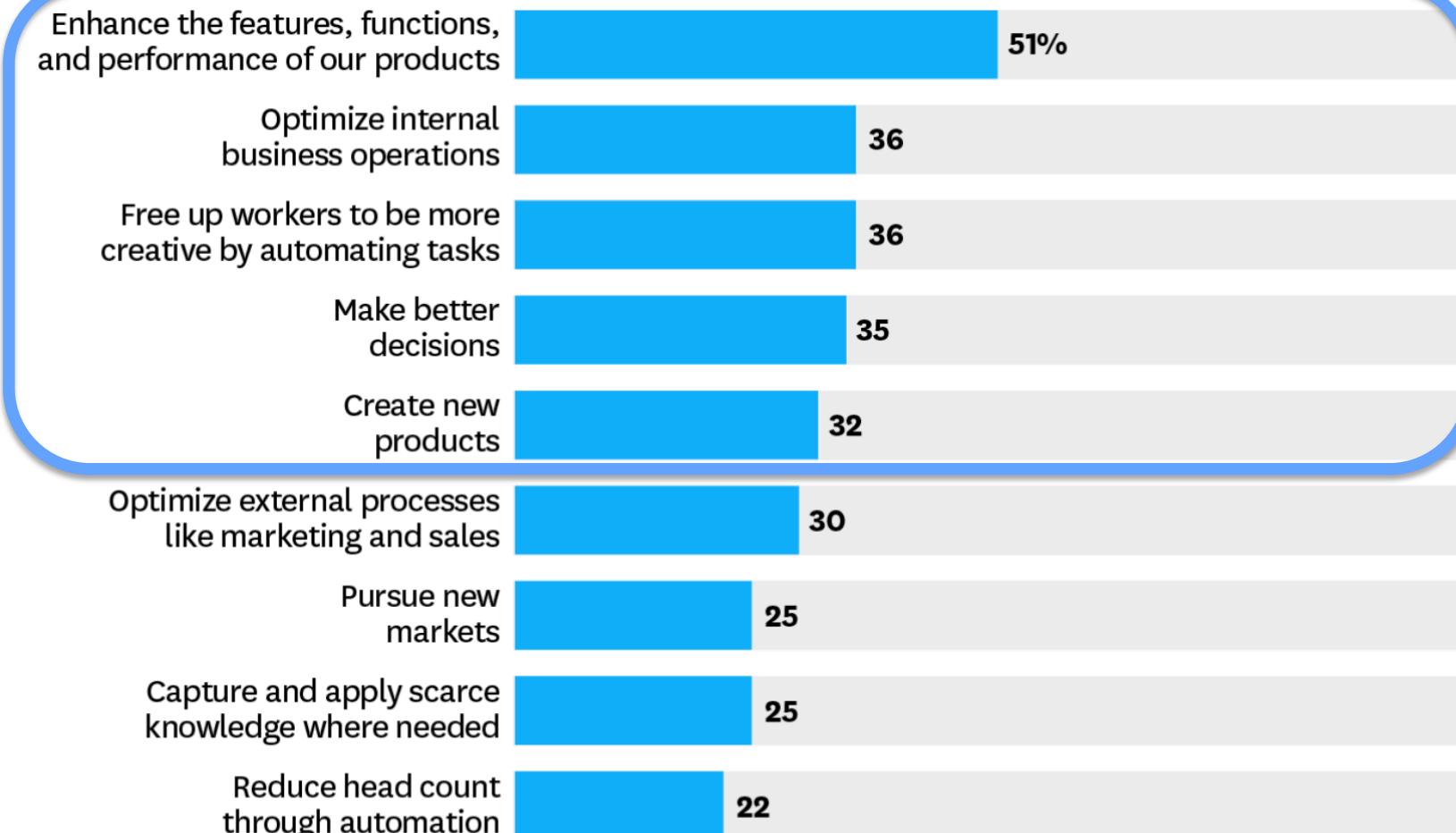
COGNITIVE ENGAGEMENT

24

The Business Benefits of AI

We surveyed 250 executives who were familiar with their companies' use of cognitive technologies to learn about their goals for AI initiatives. More than half said their primary goal was to make existing products better. Reducing head count was mentioned by only 22%.

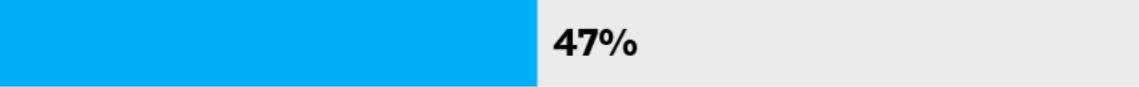
PERCENTAGE OF EXECUTIVES WHO CITE THE FOLLOWING AS BENEFITS OF AI

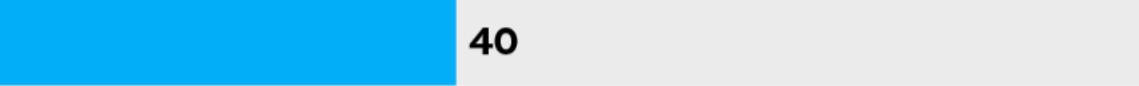


The Challenges of AI

Executives in our survey identified several factors that can stall or derail AI initiatives, ranging from integration issues to scarcity of talent.

PERCENTAGE WHO CITE THE FOLLOWING AS OBSTACLES

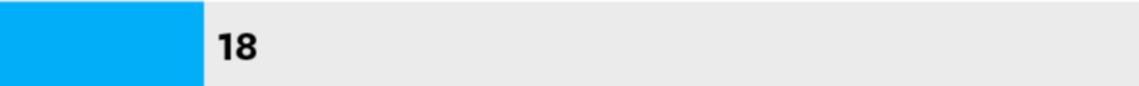
It's hard to integrate cognitive projects with existing processes and systems  47%

Technologies and expertise are too expensive  40

Managers don't understand cognitive technologies and how they work  37

We can't get enough people with expertise in the technology  35

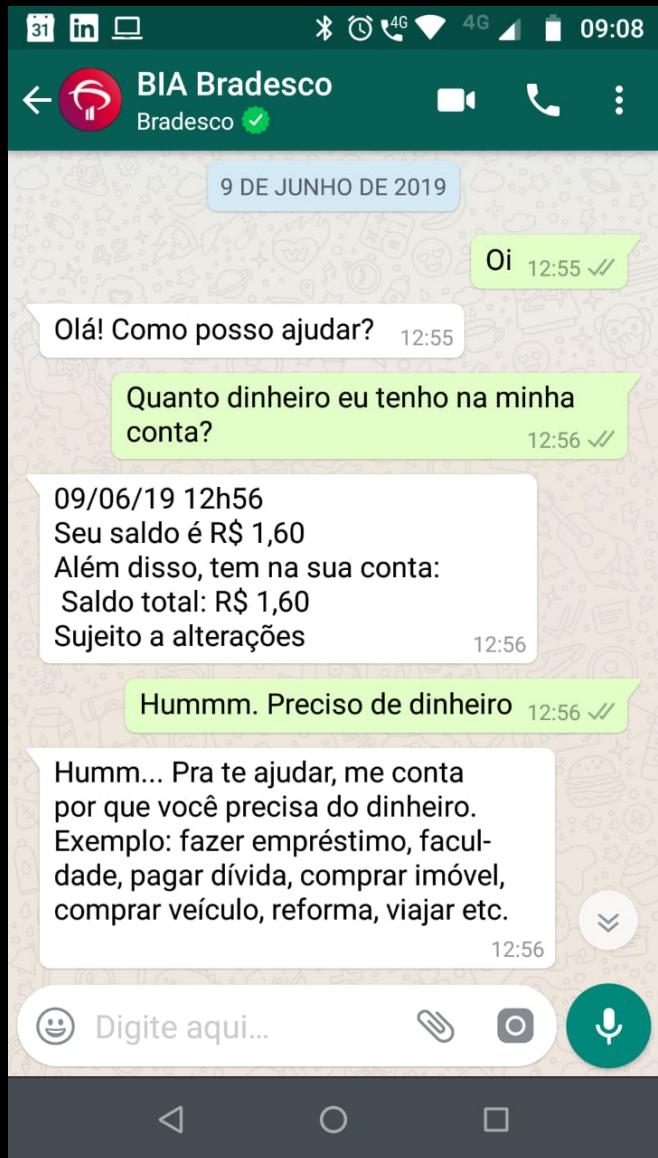
Technologies are immature  31

Technologies have been oversold in the marketplace  18

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FROM "ARTIFICIAL INTELLIGENCE FOR THE REAL WORLD,"
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Assistentes Virtuais



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Implementação de assistentes virtuais com serviços de IA

Exemplos de interações/perguntas do usuário:

Quero fazer um TED para a Ana Maria

transferência

Preciso mandar dinheiro para a minha mãe

Quero pagar uma conta

pagar conta

Qual é o valor?

....

Execução do fluxo de diálogo

Reconhecimento de entidades usando aprendizagem de máquina

Reconhecimento de entidades através de valores pré-fixados

Classificador de texto para identificação de intenções



**Watson Assistant (formerly
Conversation)**

Lite • IBM

Add a natural language interface to your application to automate interactions with your end users. Common applications include virtual agents and chat bots tha...

Implementação de assistentes virtuais sem serviços de IA

Classificador de texto para identificação de intenções

- **Pré-processar os dados:** alto custo para dados do tipo texto (não-estruturados).
- **Construção dos modelos:** alto custo de desenvolvimento devido a necessidade de vários testes empíricos.
- **Entrega:** difícil integração com demais componentes de software.

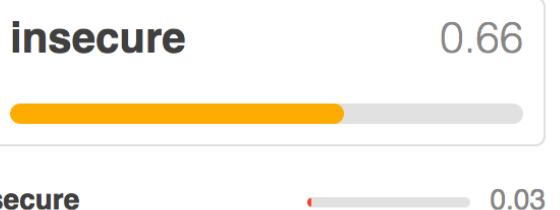
Reconhecimento de entidades nomeadas

- **Construção dos modelos:** alto custo de desenvolvimento devido a necessidade de vários testes empíricos.
- **Entrega:** difícil integração com demais componentes de software.



(*) KDD, CRISP-DM

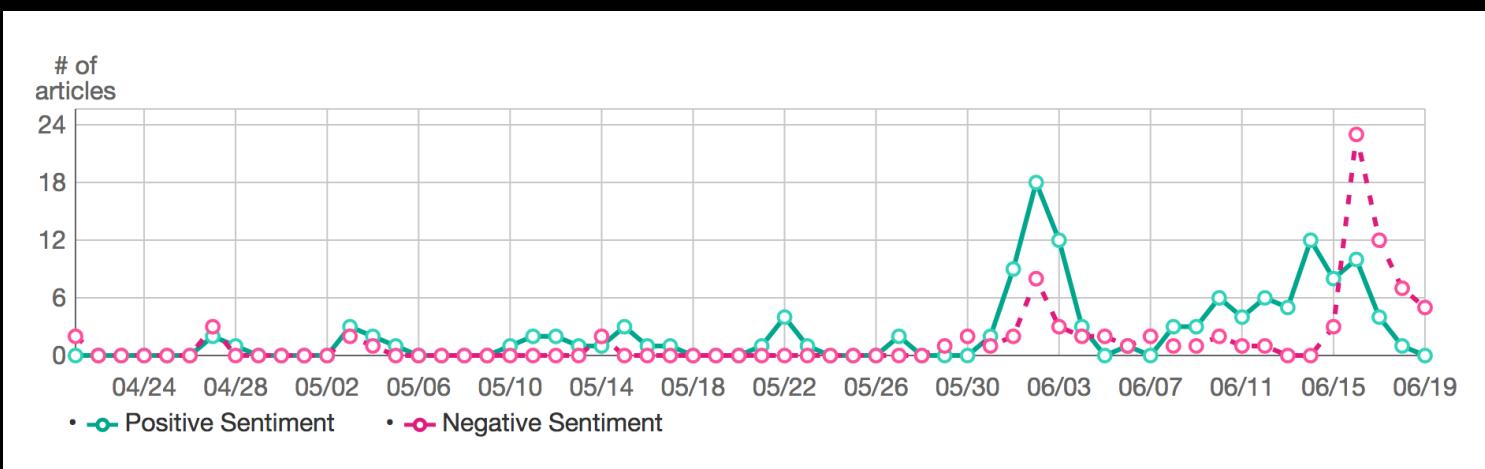
Modelos preditivos e descritivos



Column name	Type	
preco	Integer	✓
area	Integer	
suites	Integer	
dormitorios	Integer	
banheiros	Integer	

Selected prediction **Configure prediction**

PREDICTION TYPE **REGRESSION** **OPTIMIZED METRIC** **RMSE**



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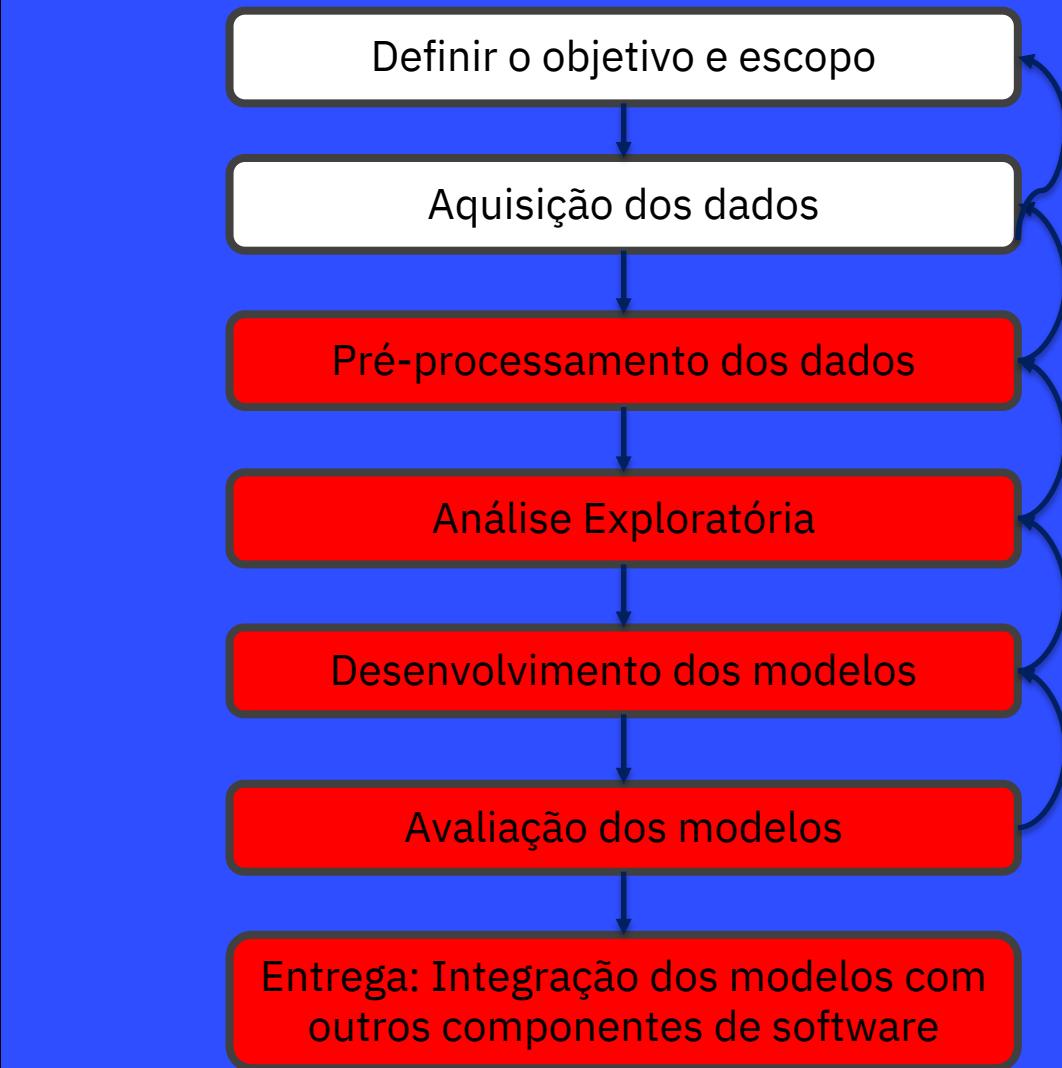
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Implementação de modelos preditivos sem serviços na Cloud

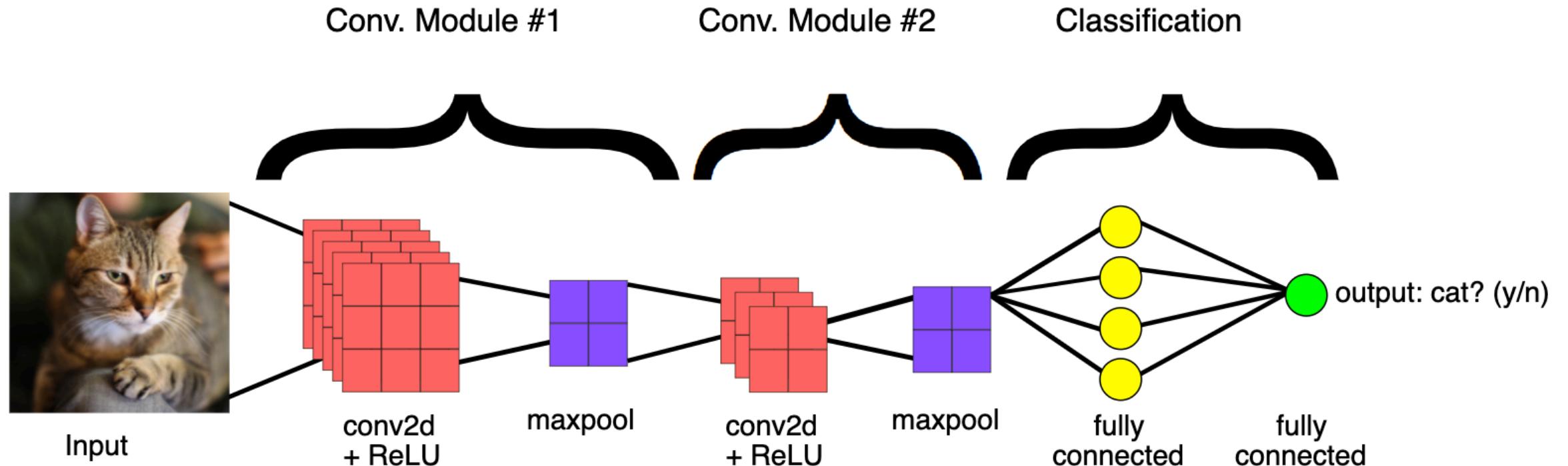
Classificação de imagens

Classificação ou Regressão usando dados estruturados

- **Pré-processar os dados:** alto custo para seleção dos atributos, preenchimento de dados faltantes ou exclusão de atributos.
- **Construção e avaliação dos modelos:** alto custo de desenvolvimento devido a necessidade de vários testes empíricos.
- **Entrega:** difícil integração com demais componentes de software.



Classificação de imagens: processo sem uso de serviço na Cloud



Classificação de imagens: processo com uso de serviço na Cloud

Treino

quantidadePortas

Associated Service : Visual Recognition-p8

My classes (3)

All images (28)

Drag and drop files from your project.

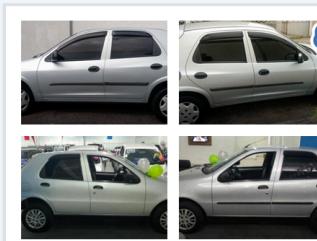
3 classes | 0 incomplete classes | 0 unclassified images



Create a class



2Portas.zip (14)



4Portas.zip (14)



Train Model

Search classes



New training data size: 0.0/250 MB

Utilização

pip

```
pip install --upgrade "watson-developer-cloud>=2.4.1"
```

Authentication

```
from watson_developer_cloud import VisualRecognitionV3

visual_recognition = VisualRecognitionV3(
    version='{version}',
    iam_apikey='{apikey}'
)
```

Classify an image

```
import json
from watson_developer_cloud import VisualRecognitionV3

visual_recognition = VisualRecognitionV3(
    '2018-03-19',
    iam_apikey='{iam_api_key}')

with open('./fruitbowl.jpg', 'rb') as images_file:
    classes = visual_recognition.classify(
        images_file,
        threshold='0.6',
        classifier_ids='quantidadePortas_2053215291').get_result()
print(json.dumps(classes, indent=2))
```

Implementação de modelos preditivos com AutoAI



Algoritmos

Algoritmos considerados para problemas de **classificação**

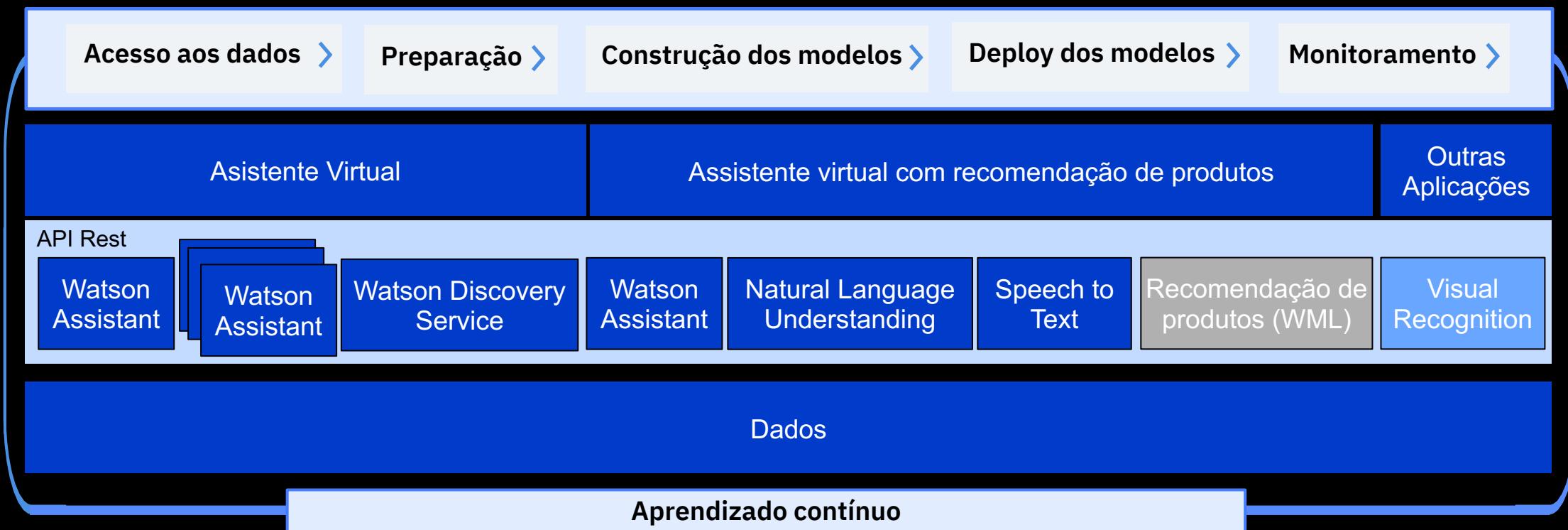
AdaBoost	Bernoulli Naïve Bayes	Calibrated Classifier with Cross-Validation	Decision Tree	Extra Trees
Gaussian Naïve Bayes	Gaussian Process	Gradient Boosted Tree	Nearest Neighbor Analysis	Label Propagation
Label Spreading	LGBM	Linear Discriminant Analysis	Linear Support Vector	Logistic Regression with Cross-Validation
Logistic Regression	MLP Classifier	Multinomial Naïve Bayes	Nearest Centroid	Nu Support Vector
Passive Aggressive	Perceptron	Quadratic Discriminant Analysis	Radius Neighbors	Random Forest
Ridge Classifier with Cross-Validation	Ridge Classifier	SGD	Support Vector	XGBoost

Algoritmos considerados para problemas de **regressão**

AdaBoost	ARD	Bayesian Ridge	CCA	Decision Tree
Extra Trees	Elastic Net with Cross-Validation	Elastic Net	Gaussian Process	Gaussian Process Regression
Gradient Boosting	Huber	Nearest Neighbor Analysis	Kernel Ridge	Lars with Cross-Validation
Lars	Lasso with Cross-Validation	Lasso	Lasso Lars with Cross-Validation	Lasso Lars
Lasso Lars IC	LGBM	Linear Regression	Linear Support Vector	MLP
MultiTask Elastic Net CV	MultiTask Elastic Net	Multi Task Lasso CV	Multi Task Lasso	Nu SVR
Orthogonal Matching Pursuit with Cross-Validation	Orthogonal Matching Pursuit	Passive-Aggressive	PLS Canonical	PLS
Radius Neighbors	Random Forest	RANSAC	Ridge with Cross-Validation	Ridge
SGD	Support Vector	Theil-Sen	XGBoost	

Implementação, acompanhamento e evolução de sistemas de IA

Espiral positiva de soluções baseadas em IA



Uso de serviços de IA permite:

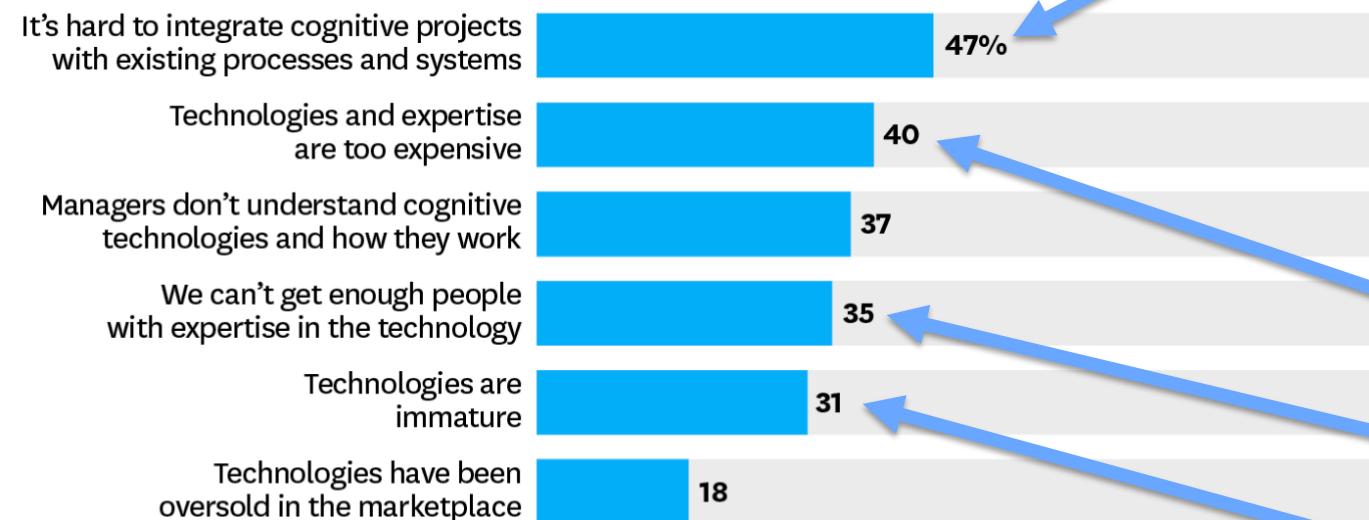
- Evolução da solução:
 - do ponto de vista de funcionalidade, e;
 - do ponto de vista de cobertura do modelo.
- **Abstração de algumas etapas relacionadas a construção dos modelos.**
- Controle e evolução da acurácia e completude dos serviços de forma individual

Vantagens

The Challenges of AI

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Ferramentas para deploy automático de modelo preditivos na forma de API Rest podem minimizar este problema.

Fornecedores de cloud disponibilizam serviços que encapsulam detalhes que são difíceis e trabalhosos de implementar. Sendo assim:

- Espera-se uma queda no custo desta tecnologia;
- Os técnicos não precisam conhecer detalhes de implementação, e;
- Ao reutilizar serviços que comprovadamente funcionam, os riscos no desenvolvimento de uma solução diminuem.

Obrigado

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