Cognitive Services & Azure Bot Services

Cognitive Services

Cognitive Services

- Microsoft Cognitive Services (formerly Project Oxford)
  - Set of APIs, SDKs and services available to developers
  - Make applications more intelligent, engaging and discoverable
- Expands on Microsoft's evolving portfolio of machine learning APIs
  - Enables developers to easily add intelligent features into their applications:
    - Emotion
    - Video detection
    - Facial recognition
    - Speech recognition
    - Vision recognition
    - Speech understanding
    - Language understanding

Cognitive Services (cont.)

Microsoft
Cognitive
Services

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

Speech
Bing Speech | Custom Speech Service | Speaker Recognition

Language
Bing Spell Check | Language Understanding | Linguistic Analysis |
Text Analytics | Translator Text & Speech | Web Language Model

Knowledge
Academic Knowledge | Entity Linking | Knowledge Exploration |
Recommendations | QnA Maker | Custom Decision Service

Search
Bing Autosuggest | Bing Image Search | Bing News Search | Bing Video
Search | Bing Web Search | Bing Custom Search

Labs
Project Prague | Project Cuzco | Project Johannesburg | Project Nanjing
| Project Abu Dhabi | Project Wollongong

Computer Vision API

- Advanced algorithms for processing images and returning information
- By uploading an image or specifying an image URL, Microsoft Computer Vision algorithms can analyze visual content in different ways based on inputs and user choices

Requirements

- Supported input methods
  - Raw image binary in the form of an application/octet stream or image URL
- Supported image formats
  - JPEG
  - PNG
  - GIF
  - BMP
- Image file size
  - Less than 4 MB.
- Image dimensions
  - Greater than 50 x 50 pixels

Tagging images

- API returns tags based on more than 2000 recognizable objects, living beings, scenery, and actions
- When tags are ambiguous or not common knowledge, the API response provides 'hints' to clarify the meaning of the tag in context of a known setting
- Image "description"
  - A collection of content tags
  - Displayed in human-readable language
  - Formatted in complete sentences

Image Tagging

```
'tags': [
    {
        "name":"grass",
        "confidence":0.999999761581421 },
    {
        "name":"outdoor",
        "confidence":0.999970674514771 },
    {
        "name":"sky",
        "confidence":999289751052856 },
    {
        "name":"building",
        "confidence":0.996463239192963 },
    {
        "name":"house",
        "confidence":0.992798030376434 },
    {
        "name":"lawn",
        "confidence":0.822680294513702 },
    {
        "name":"green",
        "confidence":0.641222536563873 },
    {
        "name":"residential",
        "confidence":0.314032256603241
    },
]
```
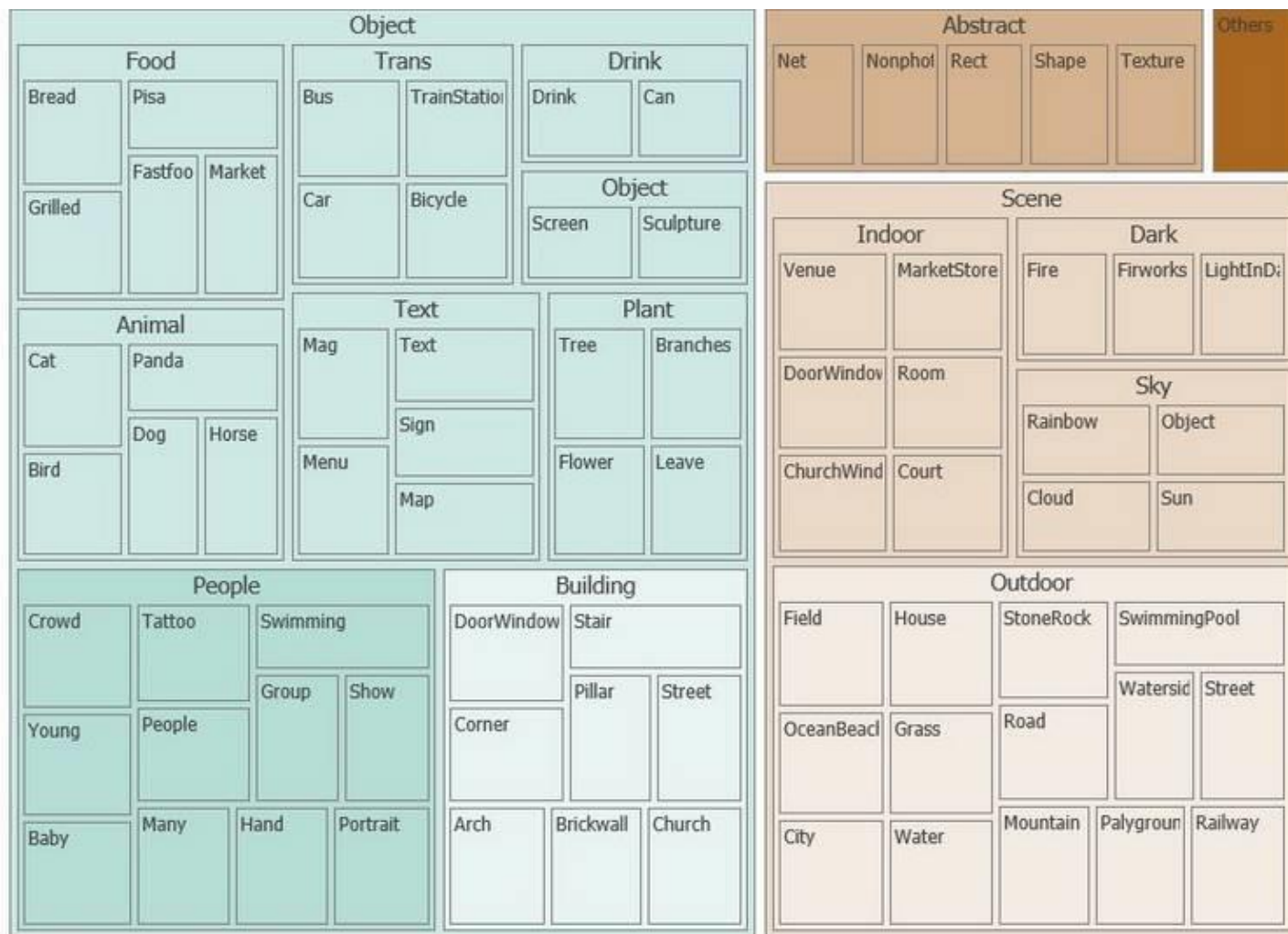
Description Generation

```
"description": {
    "captions": [
        {
                "type":"phrase",
                "text":"a black and white photo of
                        a large city",
                "confidence":0.607638706850331
        },
        {

                "type":"phrase",
                "text":"a photo of a large city",
                "confidence":0.577256764264197
        },
        {

                "type":"phrase",
                "text":"a black and white photo of
                        a city",
                "confidence":0.538493271791207
        }
    ],
    "tags": {
        "outdoor",
        "city",
        "building",
        "photo",
        "large"
    }
}
```
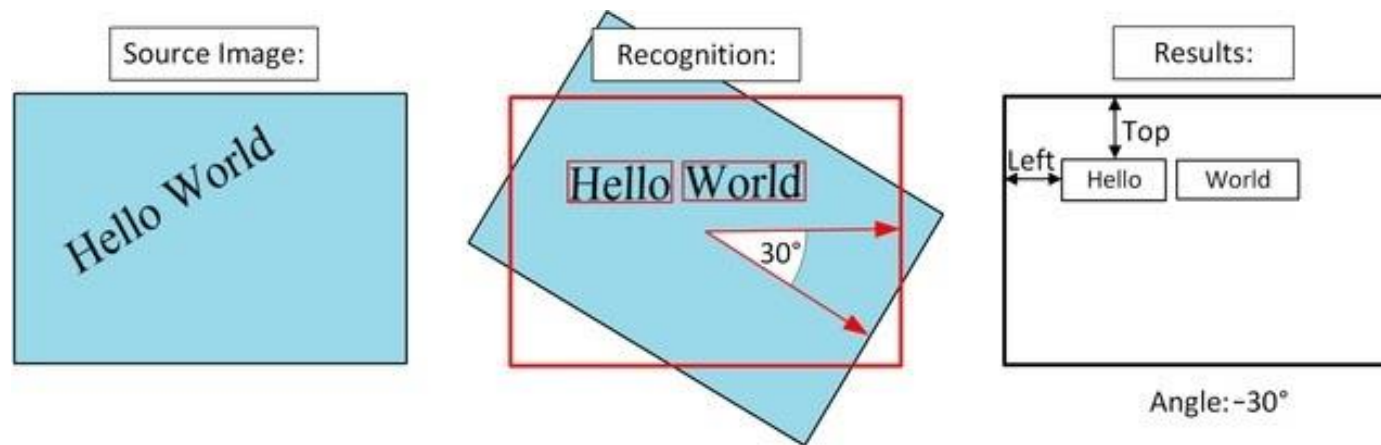
Color Schemes

Image	Foreground	Background	Colors
	Black	Black	White
	Black	White	White, Black, Green
	Black	Black	Black

86-category concept

Optical character recognition (OCR)

Source Image: Hello World

Recognition: Hello World 30°

Results: Top Left Hello World Angle: −30°

Bing Search APIs

Web Search

Custom Search

Image Search

Video Search

News Search

Autosuggest

Spell Check

Enhanced Search and Filtering Capabilities

Web-Scale

Secure (HTTPs)

High Performance

REST

schema.org

JSON

Ongoing Improvements and Support

Bing Web Search API

- API provides an experience similar to Bing.com/search
  - Returns search results that Bing determines are relevant to the user's query
  - Results may include:
    - Web pages
    - Images
    - Videos
    - News
    - Other entities
    - Related search queries
    - Spelling corrections
    - Time zones
    - Unit conversion
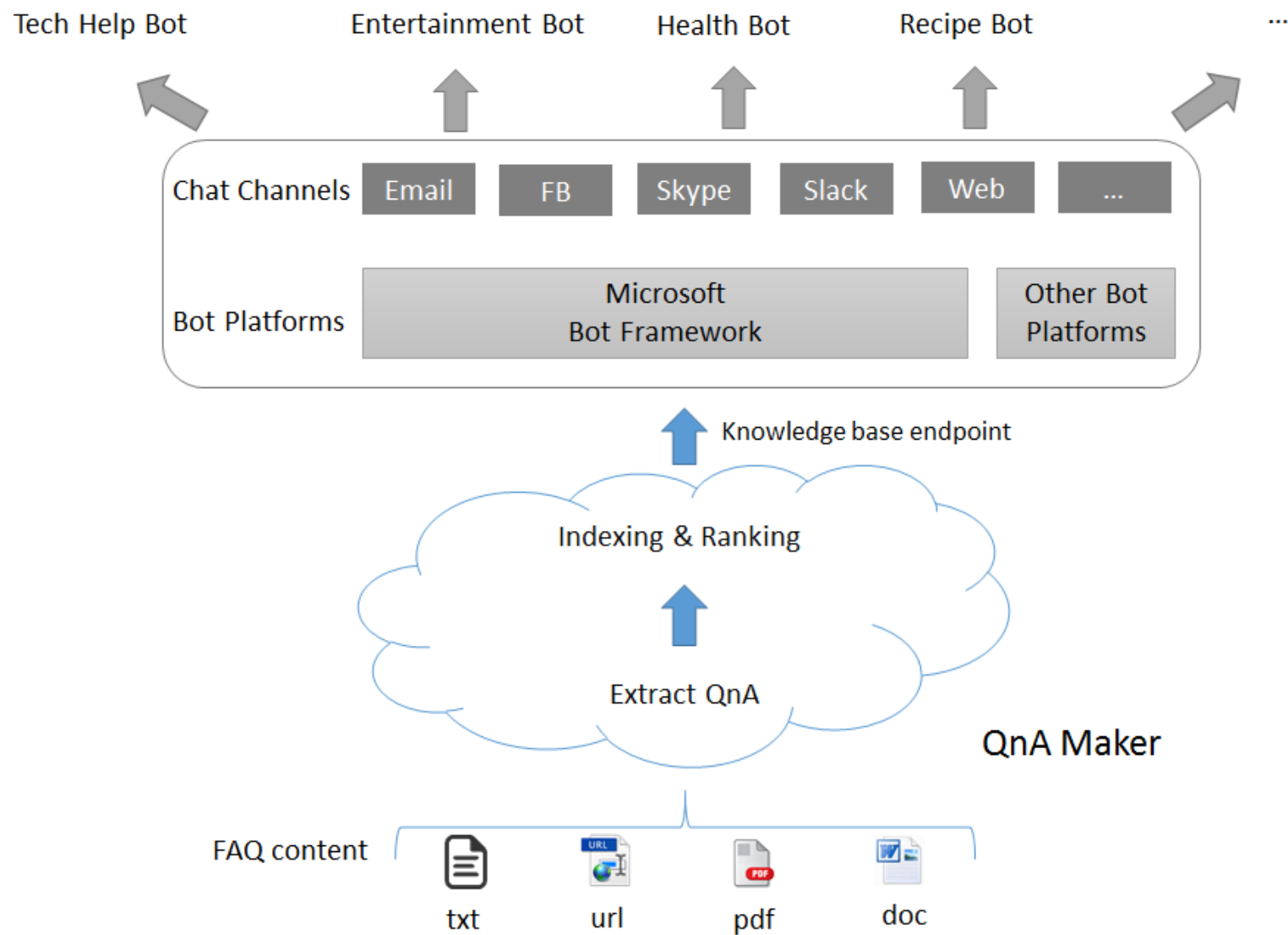   - Translations
    - Calculations

Custom Speech Service

- Cloud-based service that provides users with the ability to customize speech models for Speech-to-Text transcription
- Supports customized language and acoustic models tailored to specific applications and users

QnA Maker

- Powers a question and answer service from semi-structured content
  - Frequently Asked Questions (FAQ) documents
  - Product manuals
  - Support URLs
- Graphical user interface enables you to create, manage, train and get your service up and running without any developer code

QnA Maker

Hands-on Lab

http://bit.ly/gaibsg2018