

Conversational Economy

How we bring to the real world



Kenny Chien
Emotibot Founder & CEO



Mr. Kenny Chien, Founder & CEO

- In 2015, Mr. Kenny Chien founded Emotibot Technology, with a vision to build an emotional and sociable robot for everyone and every business, like Samantha in the movie Her.
- Prior to Emotibot, he spent over 10 years in Microsoft as Partner Engineering Director working on AI and Search products, overseeing Bing in Greater China, Japan and Korea, as well as Bing's global mobile search.
- While at Microsoft, Kenny led and drove product innovation in Artificial Intelligence including Xiaoice and Cortana in Asia. He also drove Microsoft's Windows 10 landing strategy in Greater China.

Almost 3 years bringing AI to the real world

Especially Natural Language

0 to 1

Customers



招商銀行
CHINA MERCHANTS BANK

中国民生银行
CHINA MINSHENG BANK

兴业证券
INDUSTRIAL SECURITIES

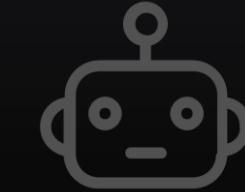
网信

交通銀行
BANK OF COMMUNICATIONS

平安财富宝
指尖上的私人财富管家

京东金融
JD Finance

平安产险
PING AN PROPERTY INSURANCE



IoT



Smart Retail



Customer Service



Innovation

CHANGHONG 長虹

UBTECH
Ubot with Robot

ECOVACS
科沃斯机器人

Freeme OS

QIYI 爱奇艺
悦享品质

唯品会
vip.com

Suning 苏宁

万达百货
WANDA DEPT. STORE

ochirly

中国移动
China Mobile

沪江
学习，成为更好的自己

CITS CITIC TRAVEL
AMERICAN EXPRESS

ECOVACS
科沃斯机器人

恒大集团
EVERGRANDE GROUP

咪咕

上海徐汇

Suning 苏宁

万达百货
WANDA DEPT. STORE

YOOZOO
游族网络

And more.....

Key to land AI applications

Real-world Experience

Scenario

Value

Usage

Breakthrough

Data

Algorithm

Engineering

Breakthrough

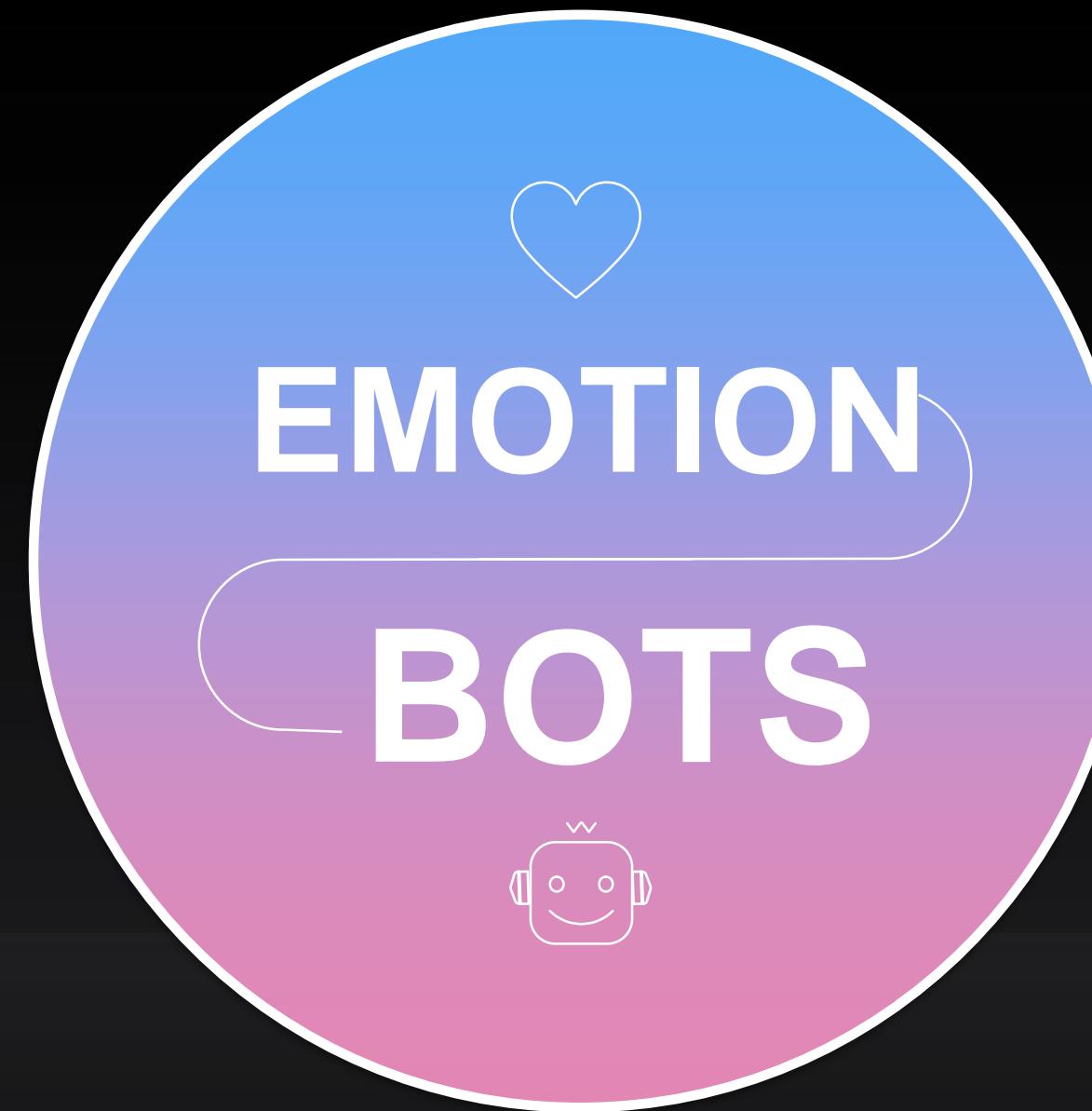
Data = Deep data vs more data

Algorithm = Learning vs state-of-the-art

Engineering = Implementable & Scalable

Human-Robot Interaction

Artificial Intelligence + Affective Computing



讀懂 Text

Bi-directional, proactive

看懂 Vision

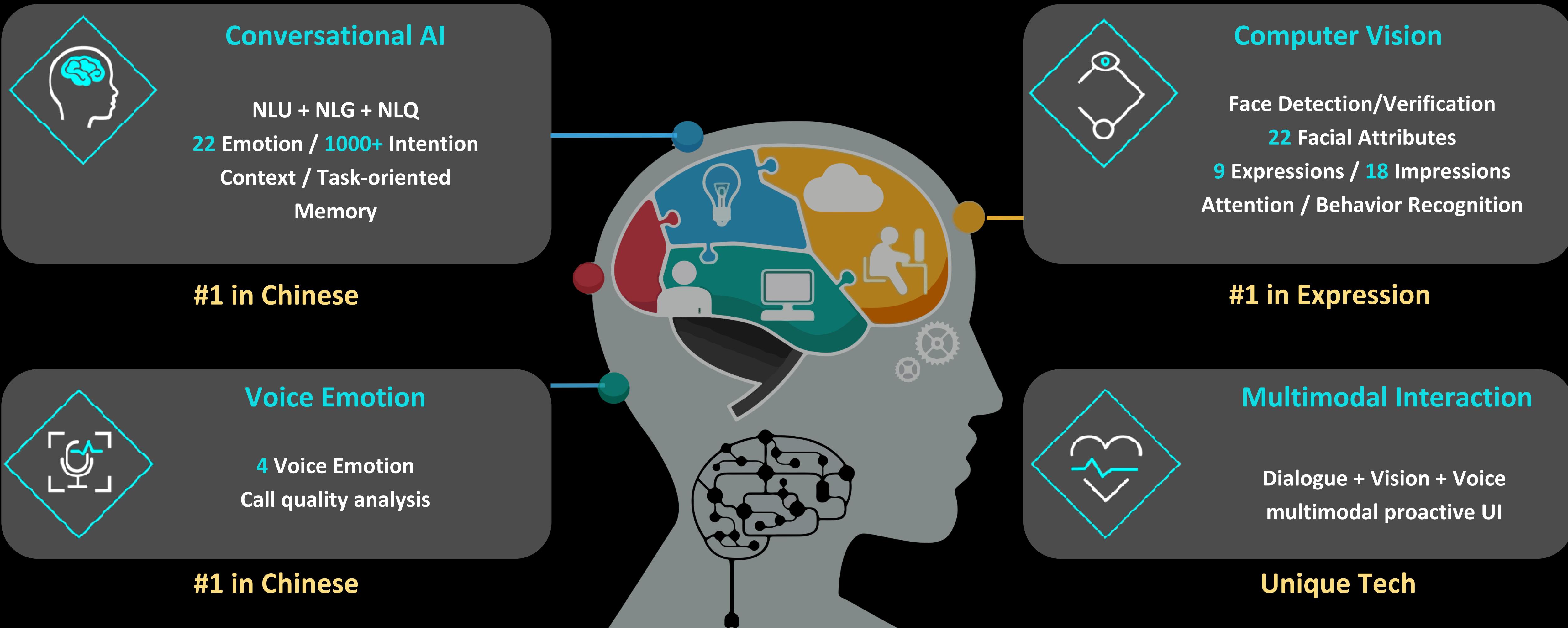
Attribute + Expression

聽懂 Voice

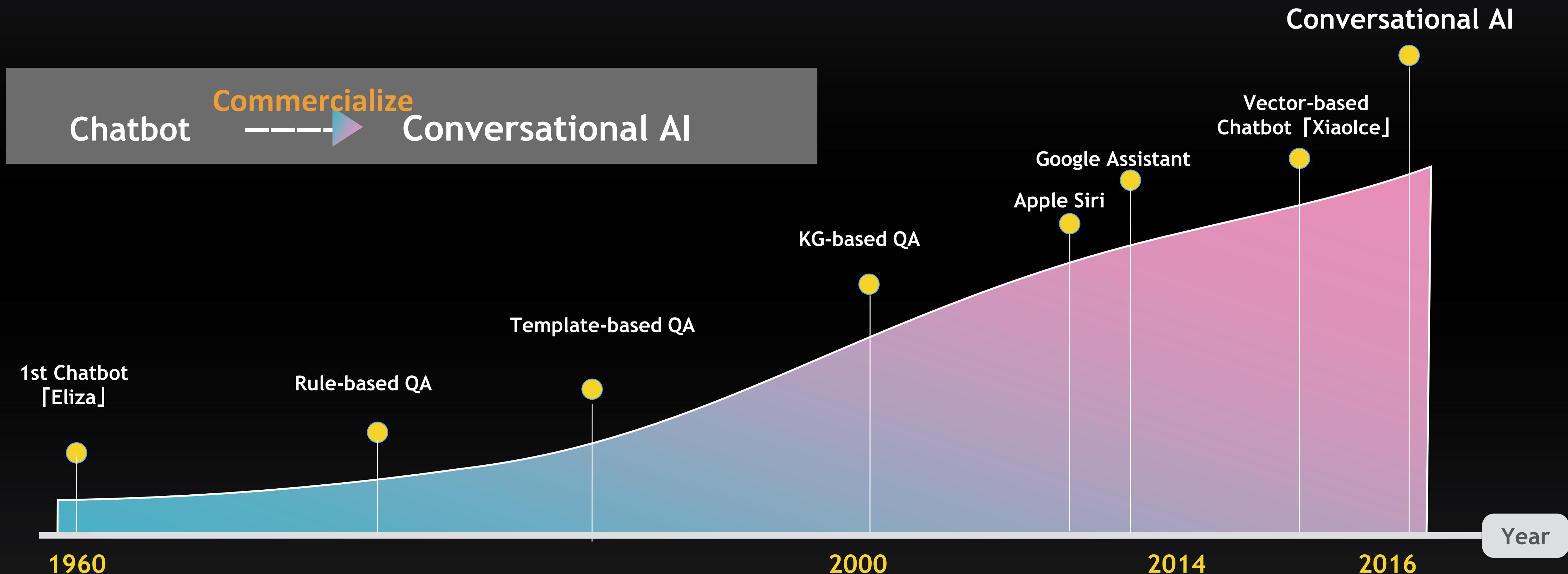
ASR + Emotion

How we model a man

Simulating how brain works: Deep Learning + Cognitive Model + Linguistics + Psychology

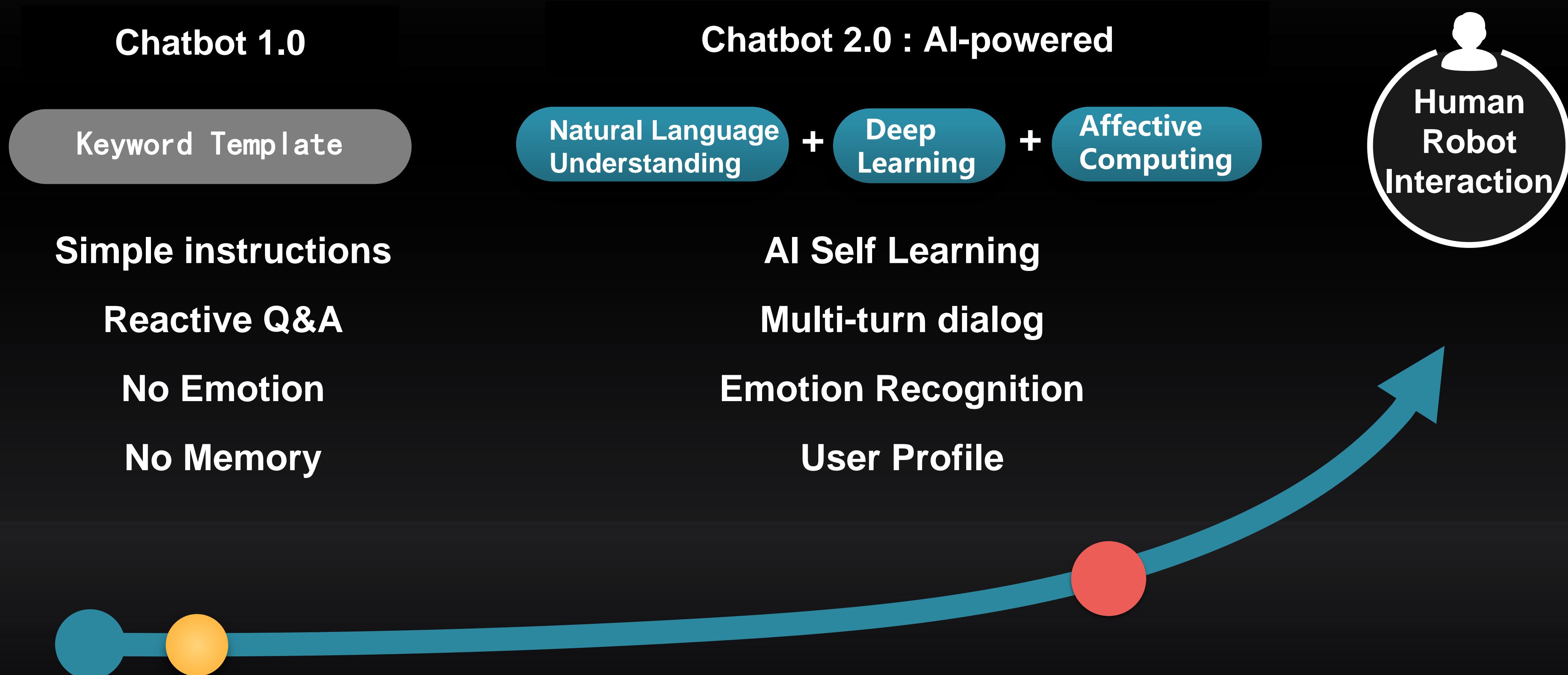


Conversational Economy is here



Text Processing ➤ NLP ➤ NLU ➤ CU ➤ User Understanding

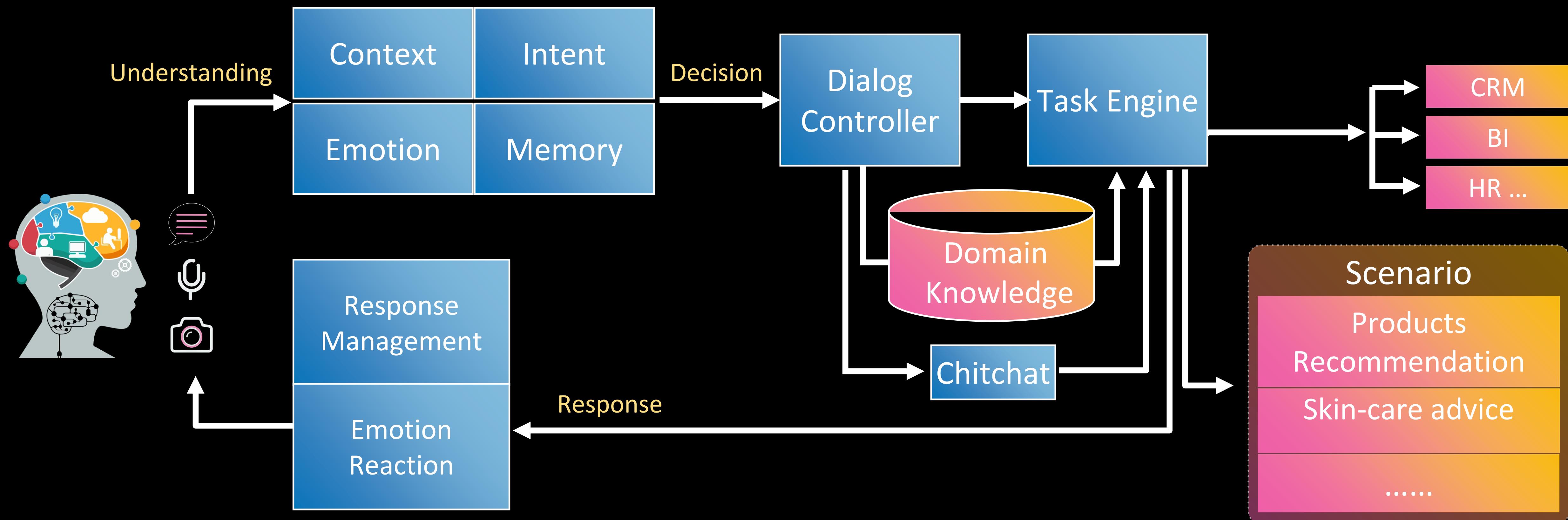
Deep Learning + NLU + Affective Computing



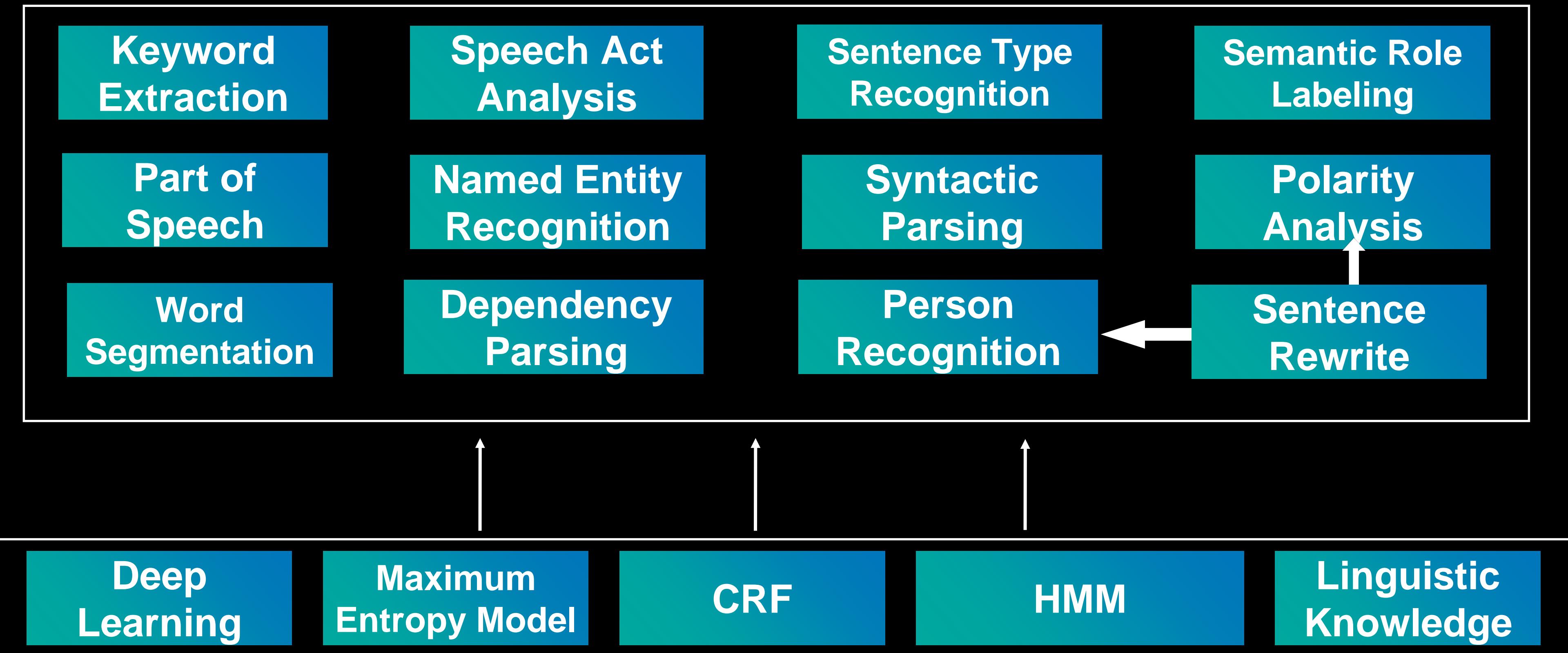
Conversational AI for business

Domain Knowledge + Domain Function + Scenarios + Deep Integration with Business Flow

Bi-directional Dialog Engine

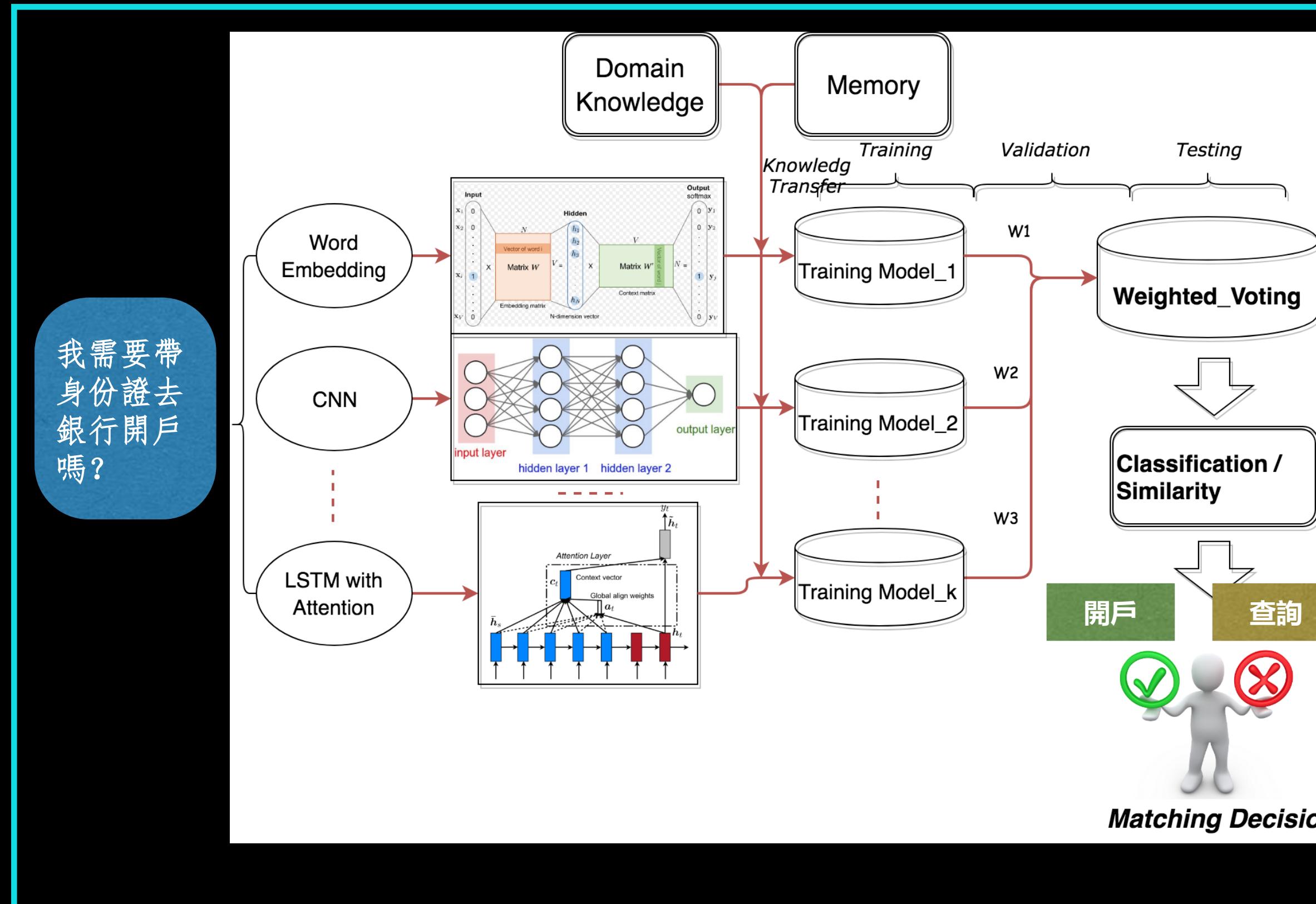


Emotibot Strength: Heavy investment in NLU fundamental technologies



Emotibot Strength: Best in FAQ matching

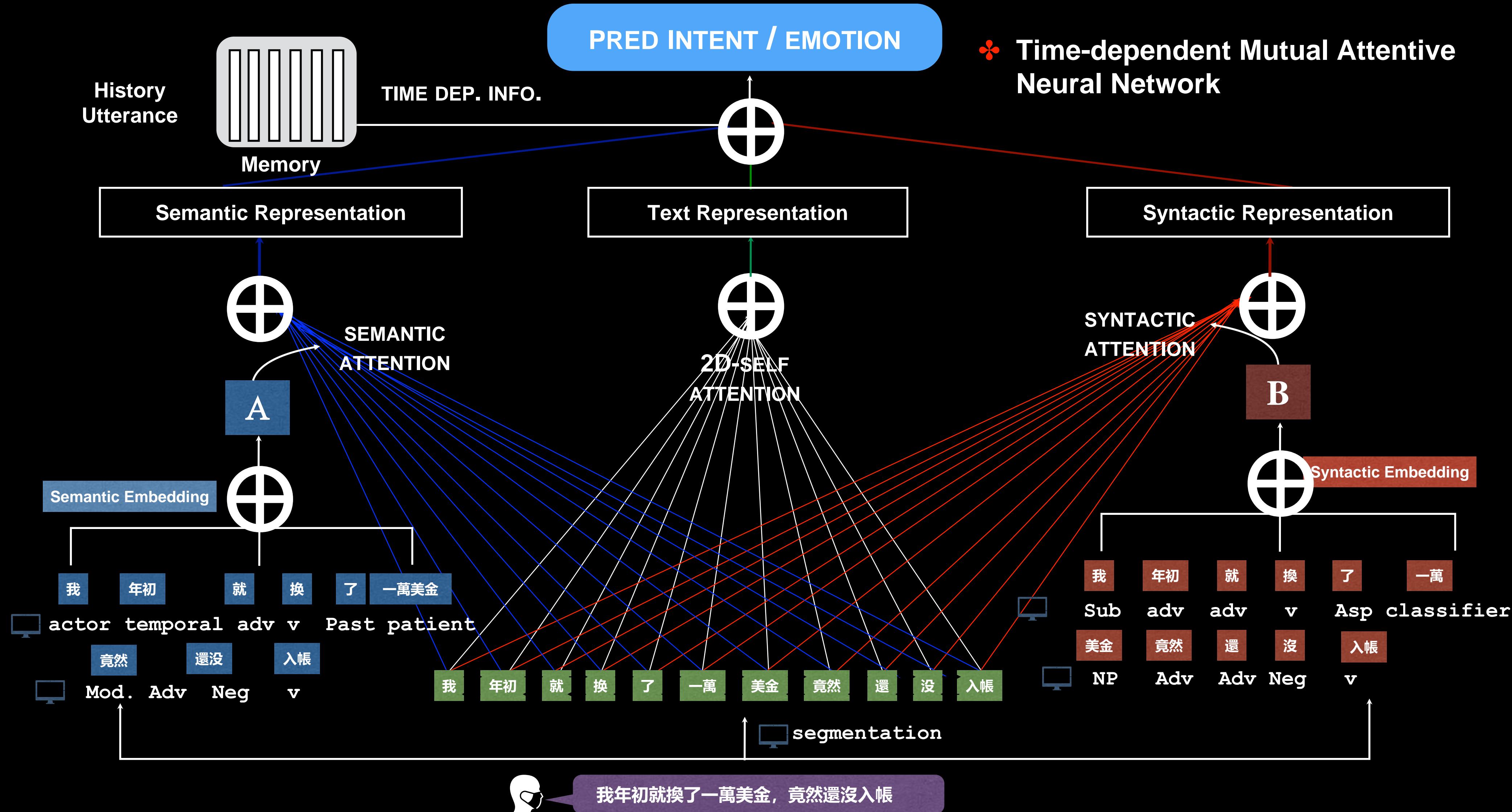
1. Accuracy: FAQ matching accuracy reaches 90%
2. Little volume of training data
3. Ensembling of several models for best performance



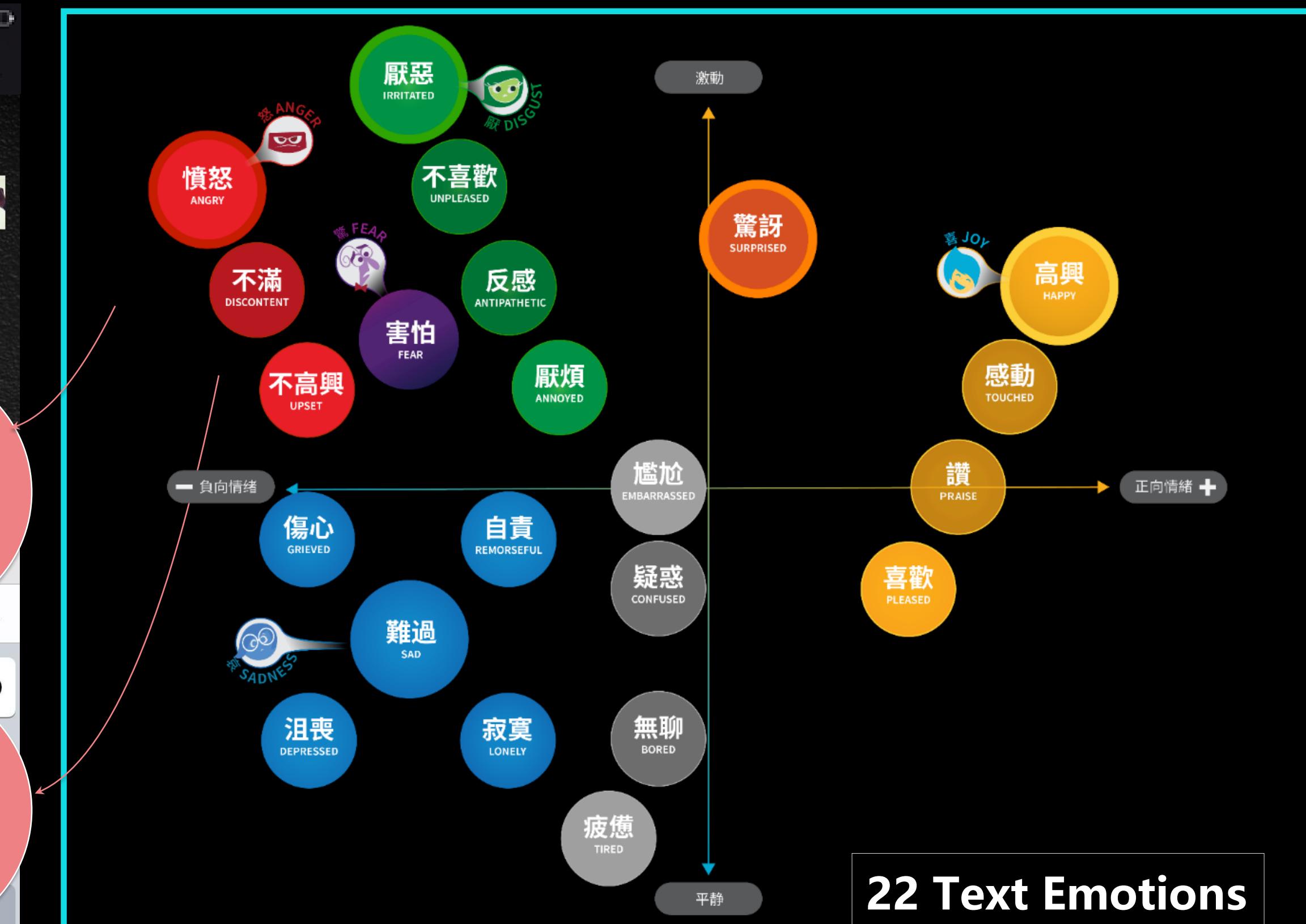
Ex: Banking Scenario



Emotibot Strength: Deep Learning based Intent and Emotion Models

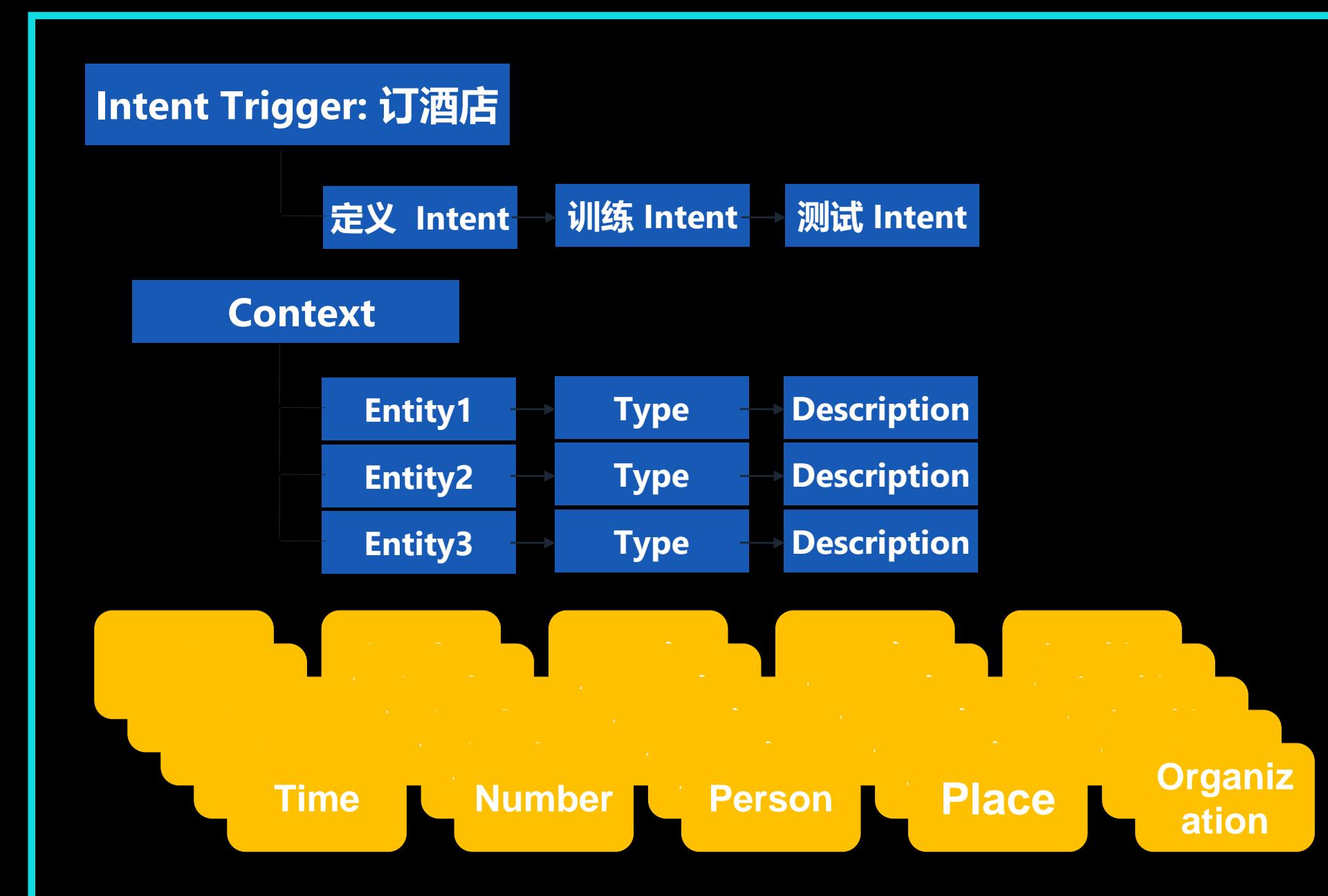


NLU Strength: Emotion Detection and Feedback



Emotibot Strength – Multi-turn Task Engine

- Easy creation of new multi-turn scenarios
- Predefined Entity Types

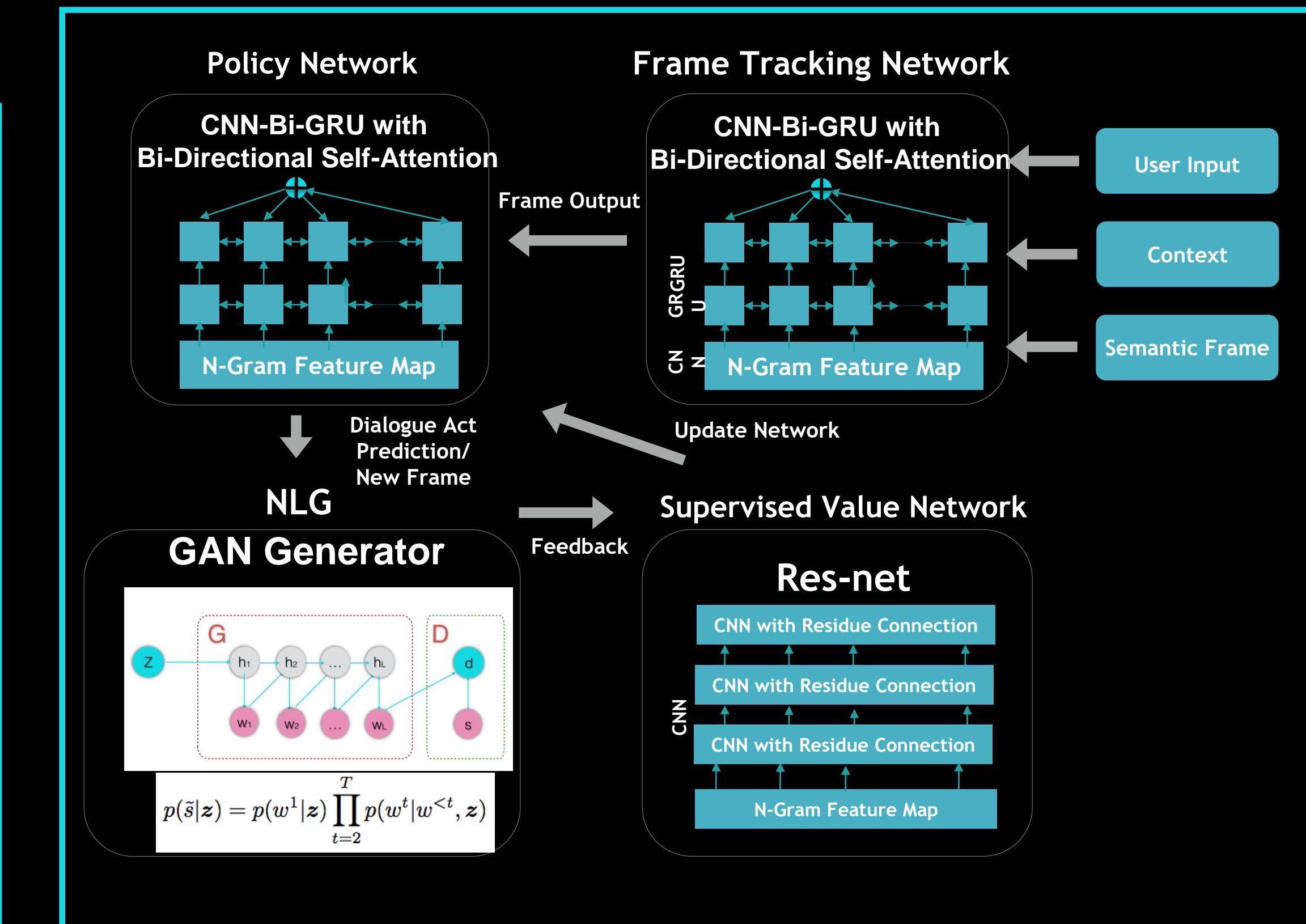


- NLU to control flow instead of regular expression



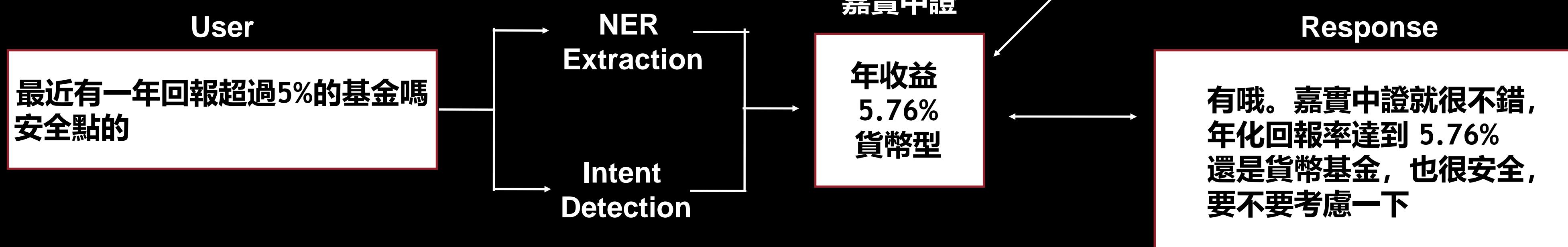
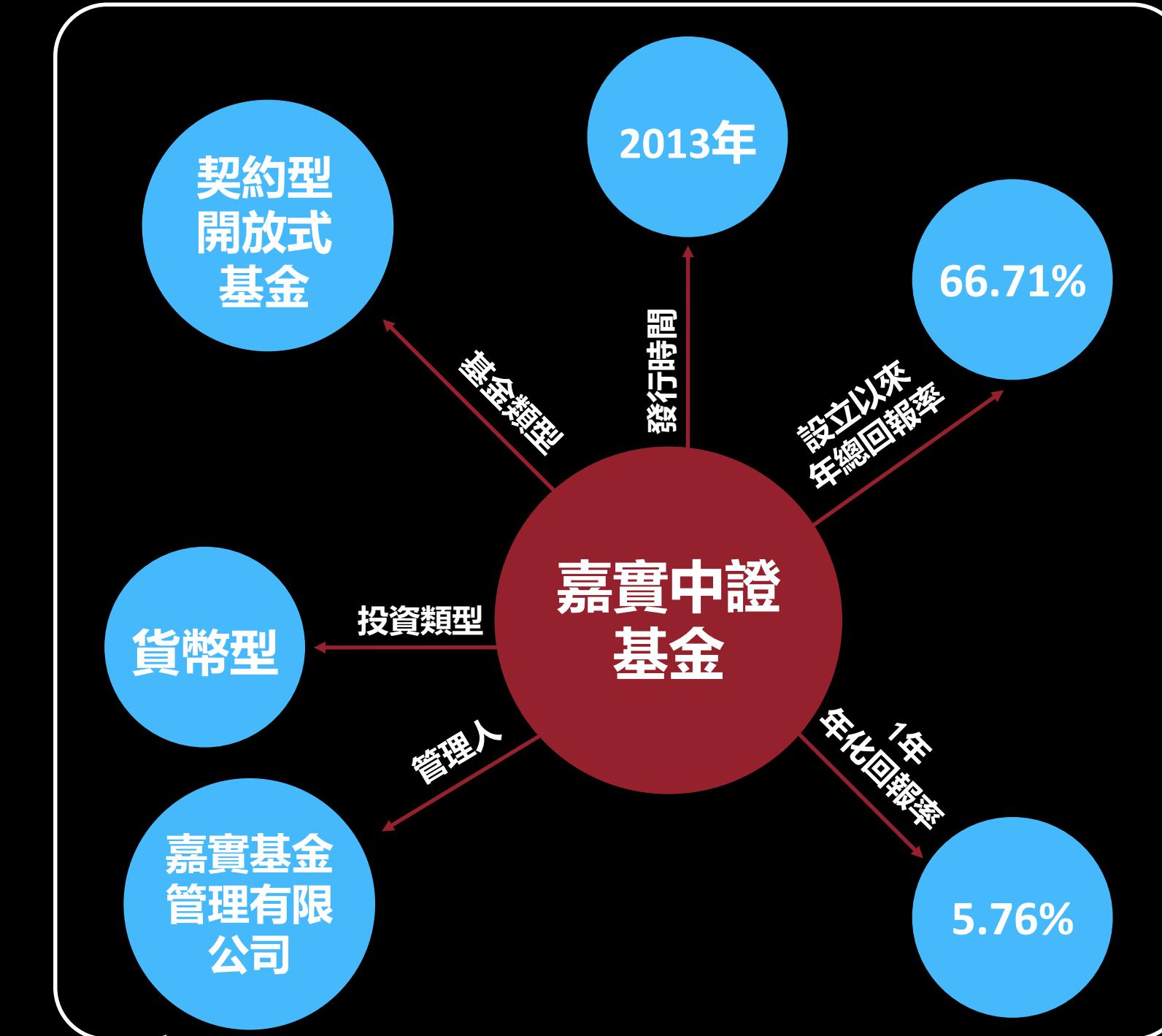
Emotibot Strength – Context understanding in dialog

Ex



Emotibot Strength – Financial Knowledge Graph

- Public knowledge graph and customized private graph for natural language queries



NLU - Best in Chinese

Different from traditional NLP, Emotibot NLP is natural language understanding based on machine learning and deep learning with advanced technology such as complex understanding module, Semantic Role Labeling and Speech-Act.

English VS Chinese

Word Segmentation

Inflection

Syntactic Constituent

Structure of Sentences

English VS Chinese

Word Segmentation

English words are separated naturally by spaces.

E.g. *In retrospect, the past 100 years of human existence have been extremely fantastic, and extremely frightening as well.*

There are no spaces between Chinese characters. We face some difficulties in segmentation, for example, cross ambiguity and combination ambiguity.

E.g. 唱十年。 (a song)
十年過去了。 (ten years)

親，包郵嗎？ (second person pronoun)
親你一下。 (kiss)

Cross ambiguity can be solved by model and rule.
Combination ambiguity can be solved by POS.

English VS Chinese

Inflection

English is an inflectional language. Words, especially verbs, changes in different situations.

E.g. *Refunding* is *inconvenient*
I often refund

Also, there are much many suffixes in English to distinguish noun, verb or adjective.

E.g. *I feel he loves me.*
My feeling is reliable.

There is no inflection in Chinese and this feature makes POS hard. It is important to distinguish predicate verbs and non-predicate verbs.

E.g. 退款很麻煩。 (麻煩 is the predicate verb)
我常常退款。 (退款 is the predicate verb)

However, Chinese words are all based on words.

E.g. 我感覺他喜歡我。 (verb)
我的感覺很準。 (noun)

A: 我覺得爬山很有意思。
B: 是啊，我爸爸常去爬山

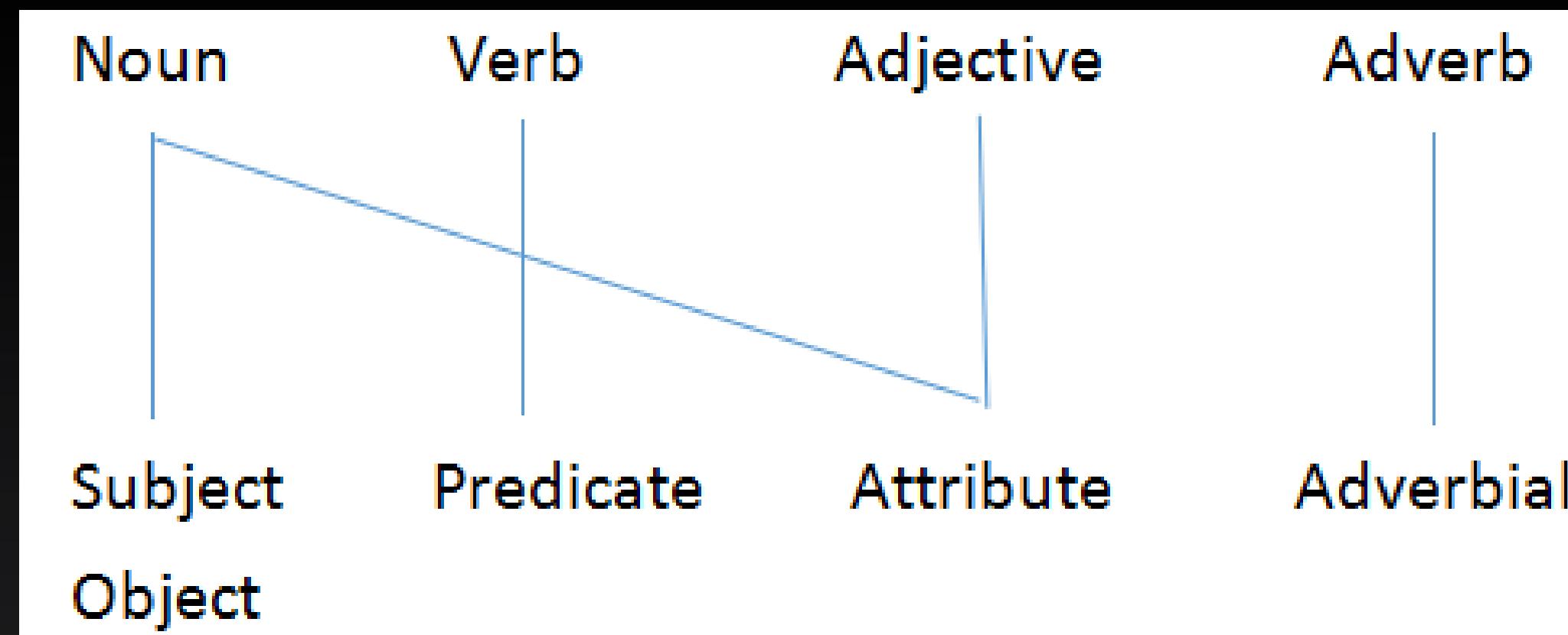
A: 我昨天去游泳啦。
B: 聽起來不錯啊，游泳對身體好。

Different labels in POS model can distinguish different functions of a word.

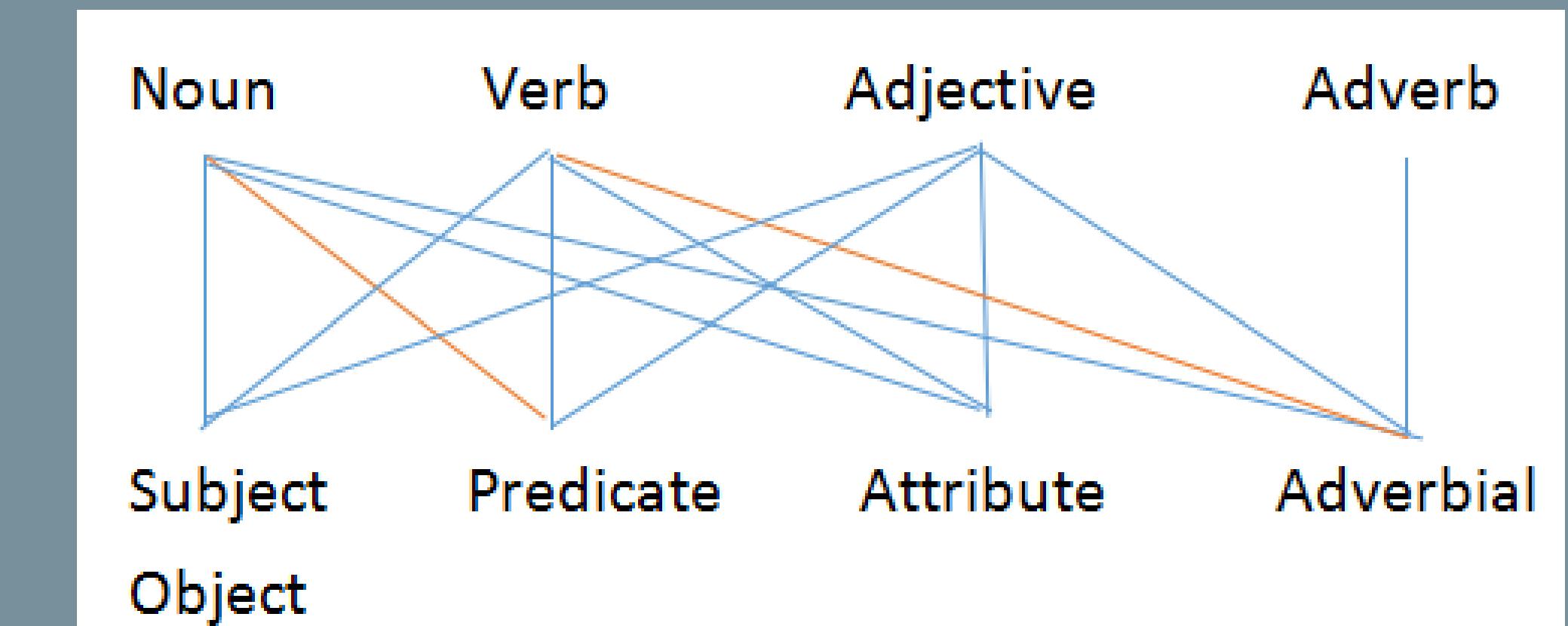
English VS Chinese

Syntactic Constituent

English words are much more easier than Chinese when they function as syntactic constituents.



Chinese noun, verb and adjective are multifunctional words. Syntactic constituents are complicated.



Parse tree and dependency analysis can help us to recognize syntactic constituent.

English VS Chinese

Structure of Sentences

The structure of sentence in English is simple.

E.g. How much is one catty of apples?

The structure of Chinese sentences is loose and semantic is much accounted of than syntax in oral Chinese.

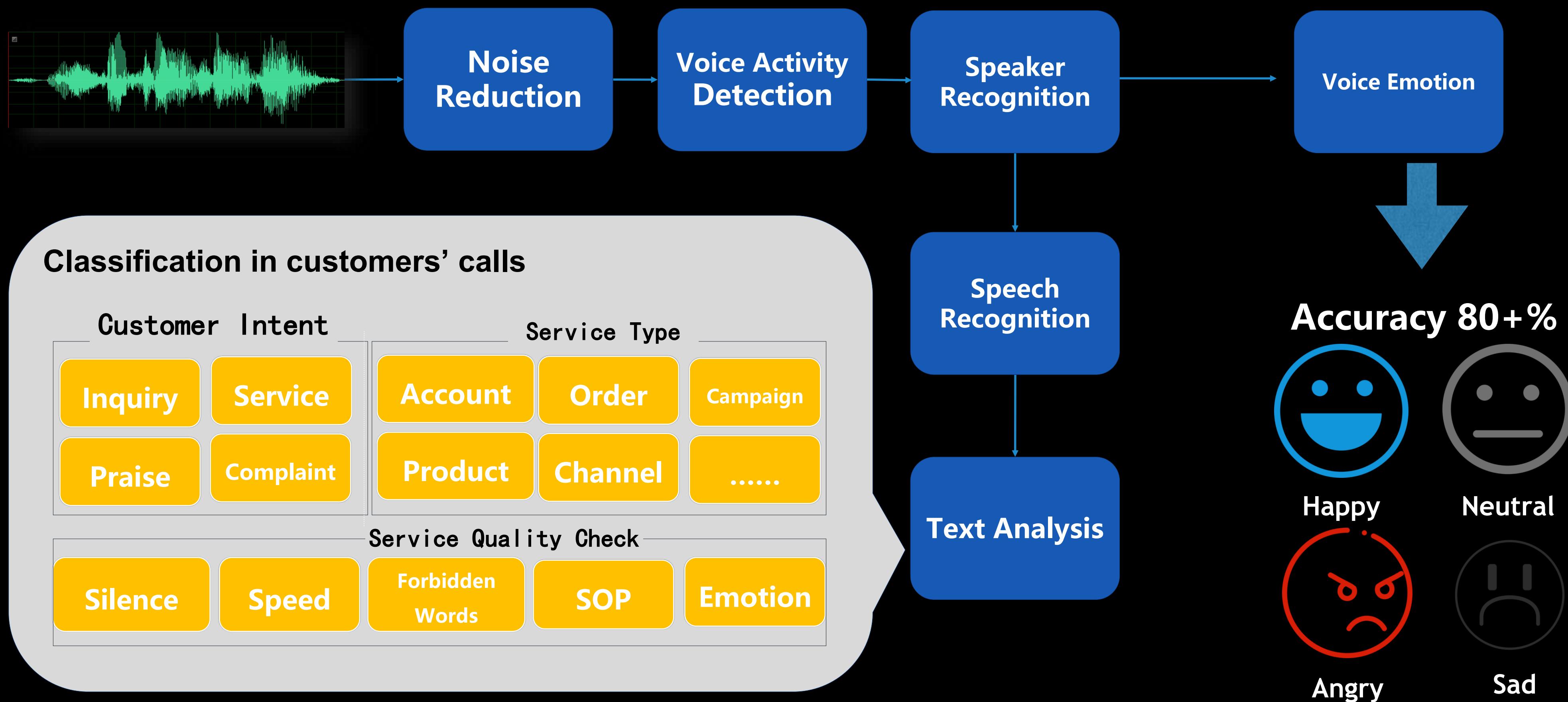
E.g. 蘋果多少錢一斤 (Cardinality wh-question)
多少錢一斤蘋果 (Cardinality wh-question)
一斤蘋果多少錢 (Cardinality wh-question)

A: 我昨天看了電影'Her'。
B: 這部電影很好看，我看過。
我看過這部電影，很好看。
這部电影我看過，很好看。

Sentence type can recognize different form sentences' type, which have same semantic meaning.

Voice Emotion in Call Center

- AI achieves 100% Call Center phone call screening to ensure service quality and customer satisfaction
- Voice recording as a form of Big Data to provide business insights on users and products

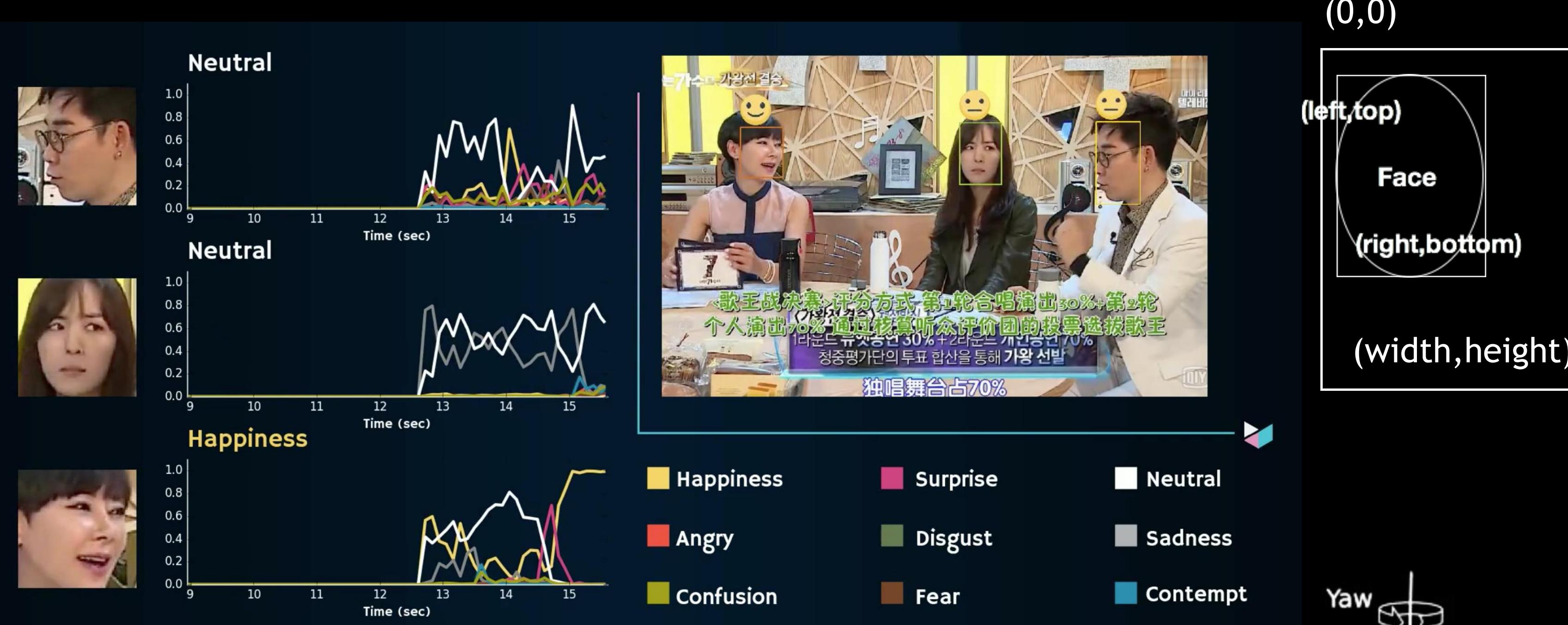


Visual Understanding

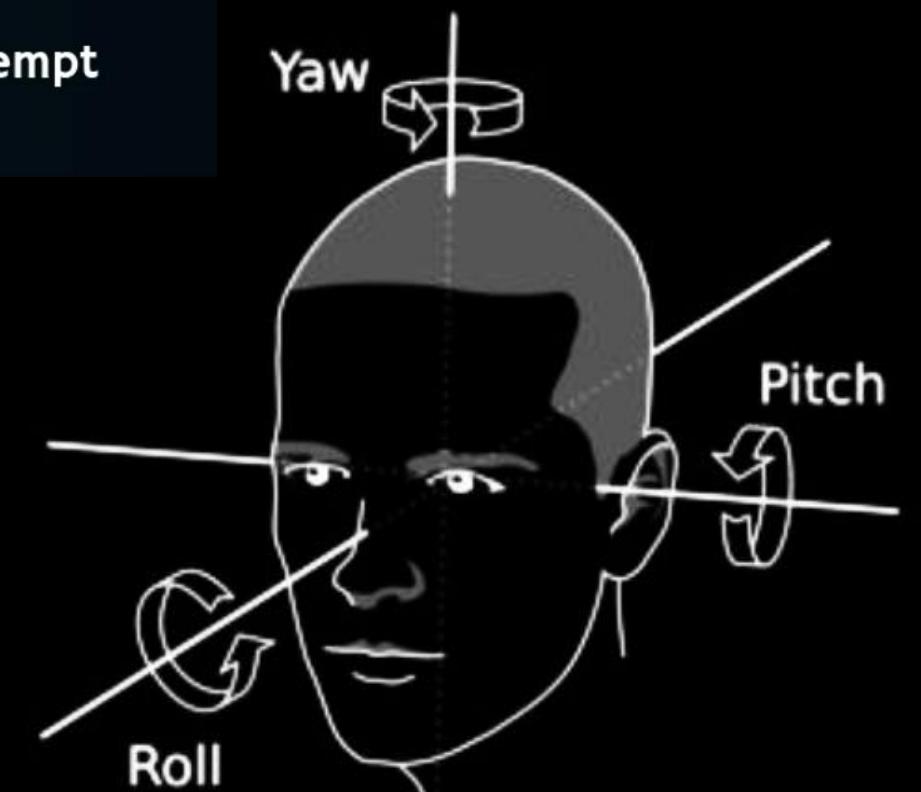


Emotion Detection
Facial Attributes
Behavioral Expressions

Emotion Detection



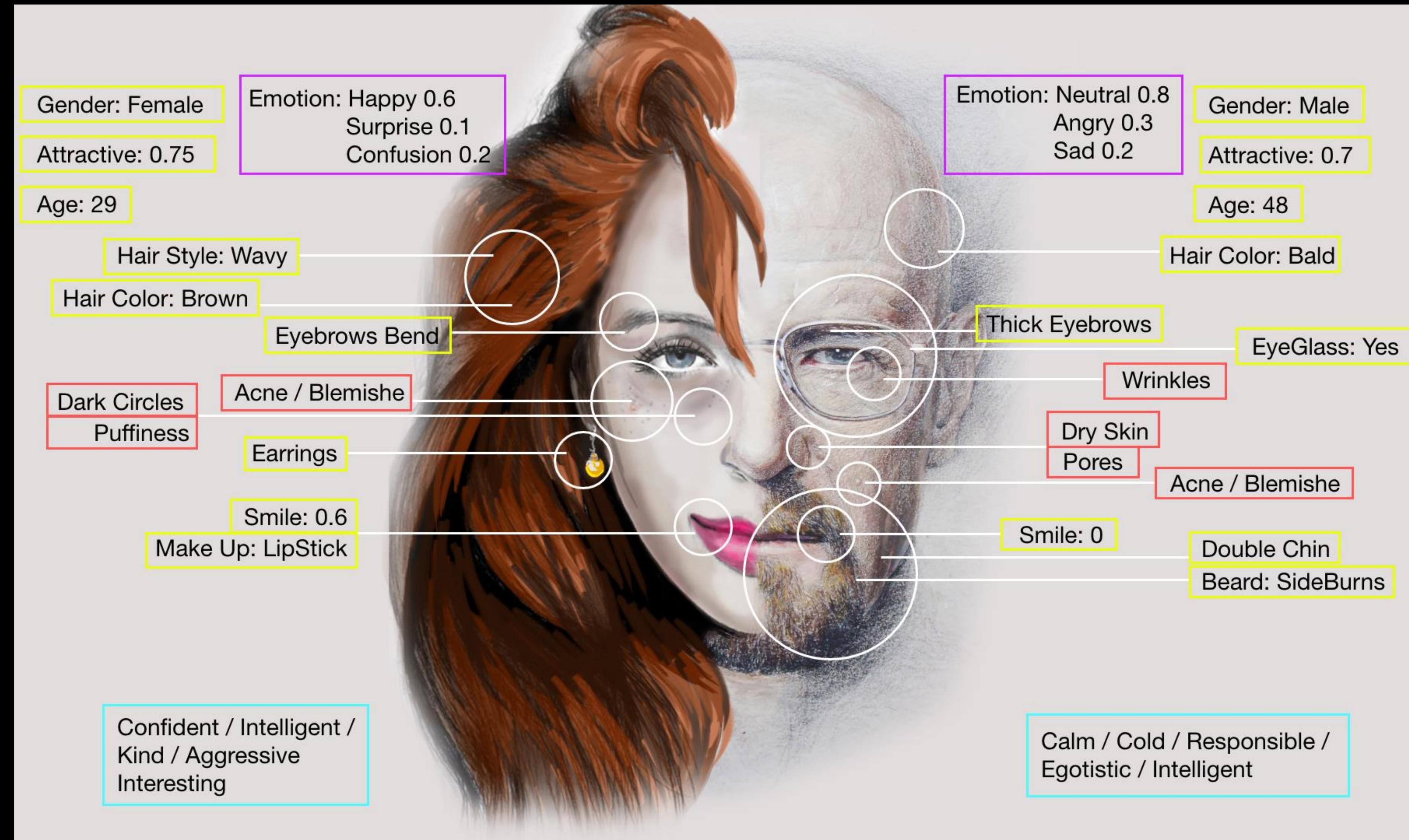
- Face Detection**
- Find the position and size of each face
 - Size/Face $\geq 128 \times 128$ px
 - Lightness : 50 ~ 1000 lum
 - Shooting Angle $< 45^\circ$



Head Pose (Intention)

- Predict head pose of the largest face
- Currently support “pitch”, “yaw”, “roll”
- Helping analyze the intention of users

Facial Attributes



交互效果相关案例

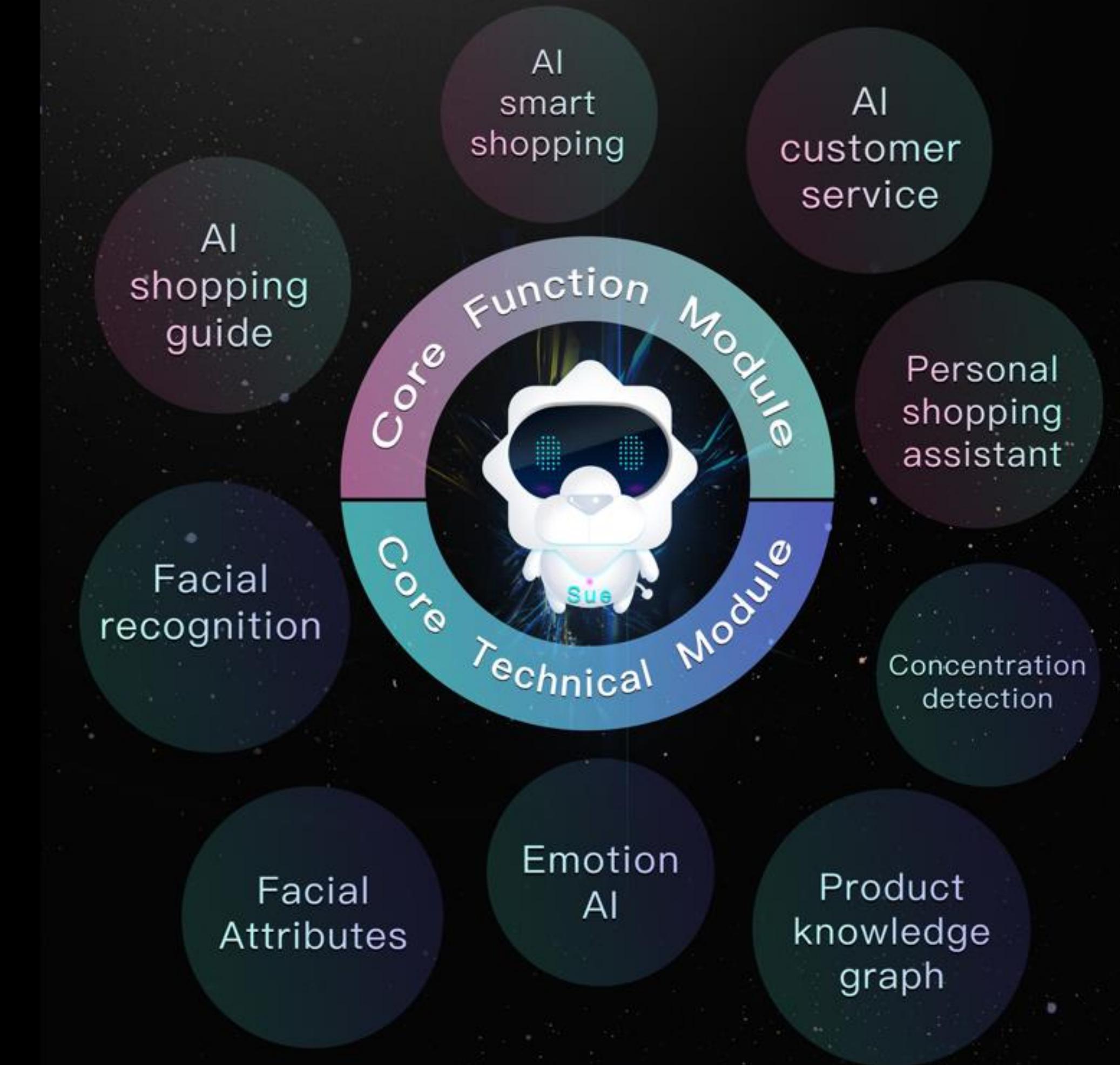
苏宁无人店 @ CES 2018

- 线上线下数据联通
- 智能推荐与导购



Smart Sue Shopping Assistant

Sue is an artificial intelligence retail chatbot jointly developed by Suning and Emotibot. Sue offers consumers a brand new shopping experience.



Suning official website:
www.suning.com

Emotibot official website:
www.emotibot.com

Shopping Assistant

Emotion Recognition Module
Natural Language Understanding
Intent Driven & Task Engine
Context & Dialogues
human-computer interaction
Statistical Precision & Prediction



竹间情感识别与对话系统
Emotion Detection & Communication System

EMOTIBOT: 好的，已经帮你直接下单了，支付宝免密付款完成
USER: [say something]

性别	女
年龄	26
颜值	76
发型	其他
发色	褐色
胡子	無
眼镜	無
痘痘	無
皱纹	無

竹间官网

竹间公众号

竹間智能願景

A bot for everyone.

A bot for every business.

There is a bot for everything.

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business@emotibot.com

公司官網

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