



BYTEDANCE

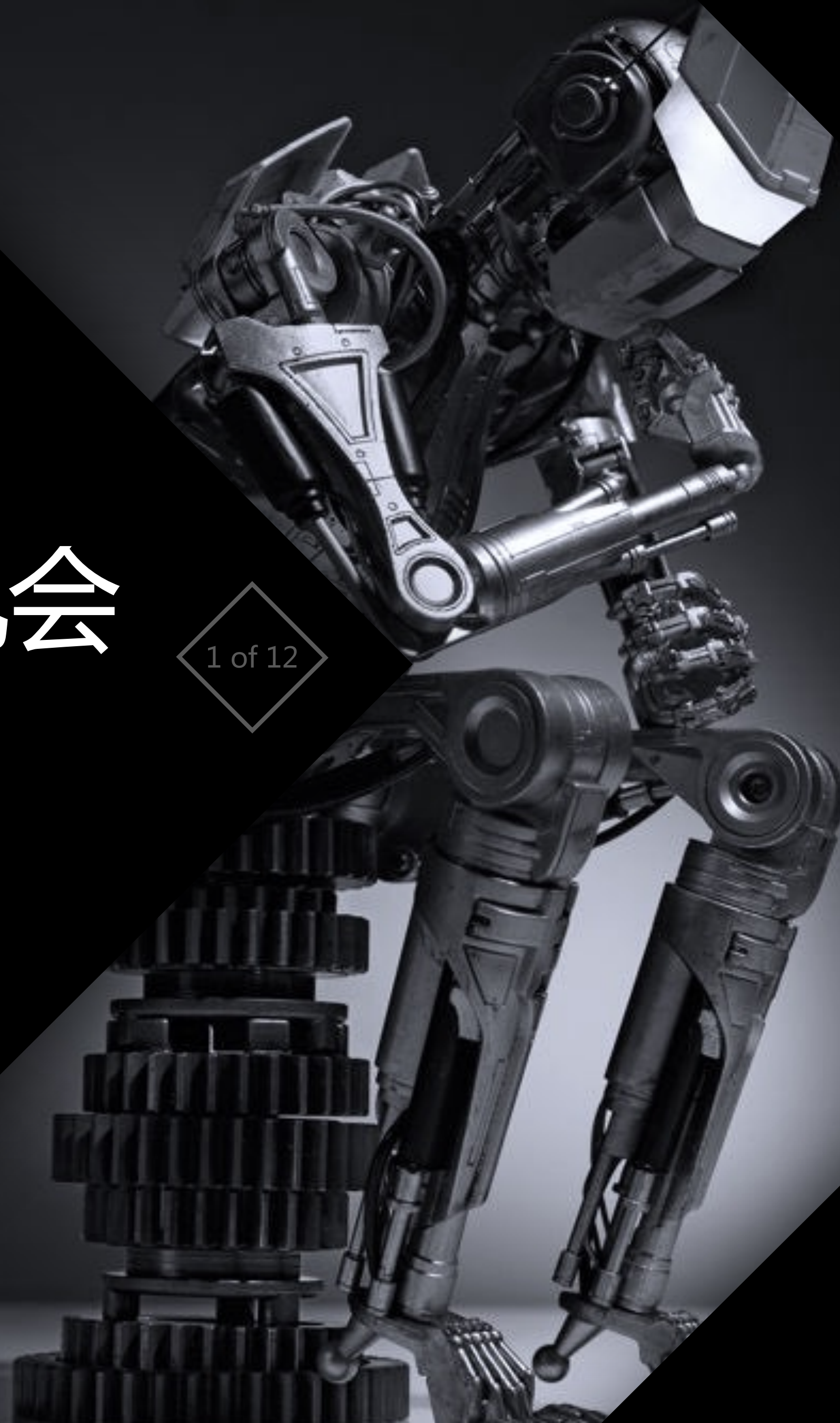
BYTEDANCE

信息流的未来与人工智能的机会

1 of 12

马维英

今日头条副总裁兼人工智能实验室负责人



≡ Connecting People and Information

- Paper invented by Cai Lun (蔡伦) around 100 BC
- The first movable-type system for printing invented by Bi Sheng (毕昇) around 1040 AD
- Both were in China

Accelerated

Equip human with super, ubiquitous machine intelligence (AI) to create, discover, use, disseminate and interact with information and content

- Smartphone
- Mobile Internet
- Apps

- PC
- Internet
- Websites

AI and Human Collaborative Learning



Paper and Printing



PC Internet



Smart Phones
Mobile Internet



Artificial
Intelligence

Super
Intelligence

今日头条：最懂你的信息平台

人的特征

兴趣 单反 科技 音乐 网球 ...
职业 学生 主妇 白领 教授 ...
年龄 17 24 35 56 ...
性别 男 女
机型 iphone 三星 小米

用户行为

团队扩张面临的问题
全新宝来发布
李娜的成功是个标杆
北京市民可定制公交车...

环境特征

地理位置 北京东城 上海浦东 长沙雨花区...
时间 早 中 晚 工作日 节假日...
网络 2G 3G WIFI
天气 多云 晴 暴雨 雪 大风 ...

文章特征

主题词 艺术 科技数码 国际 体育运动...
兴趣标签 瑜伽 旅行 网球 NBA...
热度 762 1788...
时效性 1分钟内 5分钟前 2小时前
质量 1 3 5 6
作者来源 流动科技生活 武汉晨报...
相似文章 来自未来的微波炉
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流动科技生活

评论 128 07-10 16:55

李娜与杜兰特出席活动粉 丝尖叫



武汉晨报

评论 221 07-10 14:51

你关心的

才是头条



Logistic Regression

Factorization Machine



Machine Learning: Personalized Information Feeds and Recommendation based on Deep Understanding of Content, User and Context User

三 连接人与信息, 促进创作和交流



≡ AI is Redefining Software which is Eating the World ...

Ever More Intelligent Software Written/Programmed by Big Data through Machine Learning 人工智能的本质是软件产业的革命



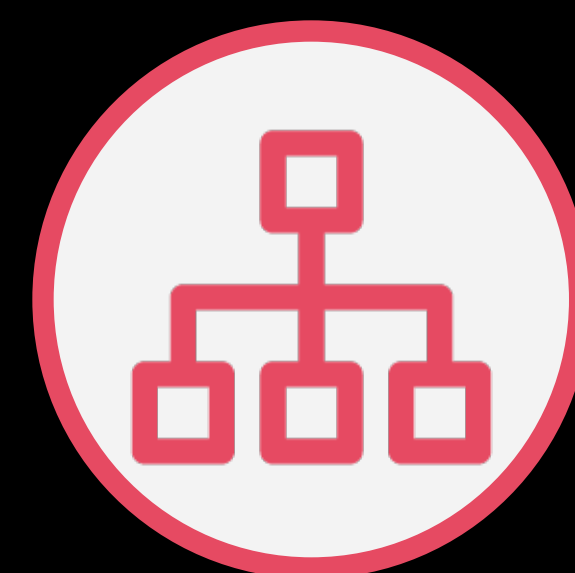
Big Data
大数据

- Digital Representation of the World
- Digitization of Everything
- Everything Connected Digitally



Big Compute
大计算

- Cloud Computing
- Smart Phones
- Smart Devices and Internet of Things



Big Model
大模型

- Semantic Representation of the World
- Machine Learning
- Vision, Speech, Text, Search, Knowledge Mining, User Modeling

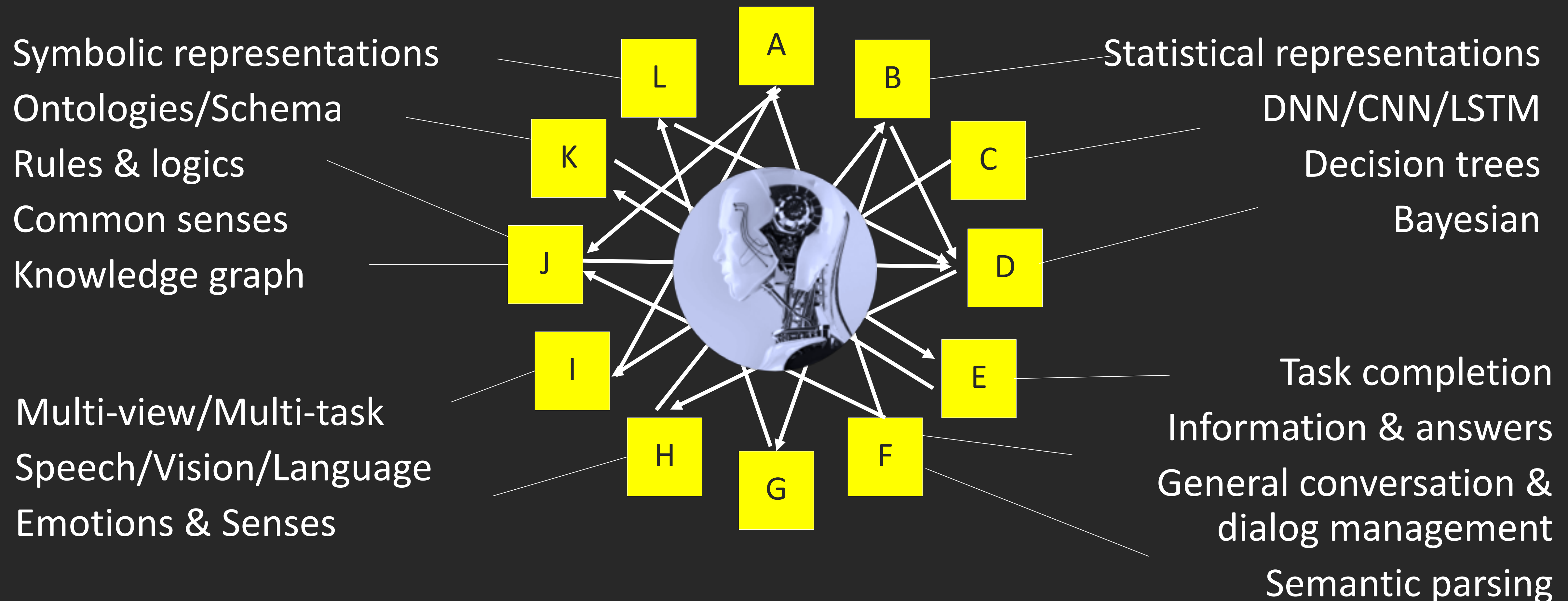


Artificial Intelligence
人工智能

- Next Generation Information Platform – Connecting People and Information
- Digital Life & Digital Work
- New Forms of HCI

Unified Multi-Model: Combining Dual, Adversarial, Collaborative, Multi-task and Transfer Learning

Enabling different models/representations to train/learn from each other via feedbacks, supervisions or associations



AI Data Warehouse: Systematically Manage/Grow Training Data/Knowledge

Domains + Schema

- Intent & language ontology
- Slot/form filling: slot names, slot values, & slot questions
- Predicate patterns & paraphrasing
- Synonyms, acronyms, and alternative expressions of elements

Entities + Relations (Knowledge Graphs)

- People, projects, teams, places, and things and their relationships
- Entities: profiles, properties and values, attributes, metadata
- Inference rules; computational rules; common senses
- Synonyms, acronyms, and alternative expressions of elements

Multi-Term Expressions + Relations (Open KB)

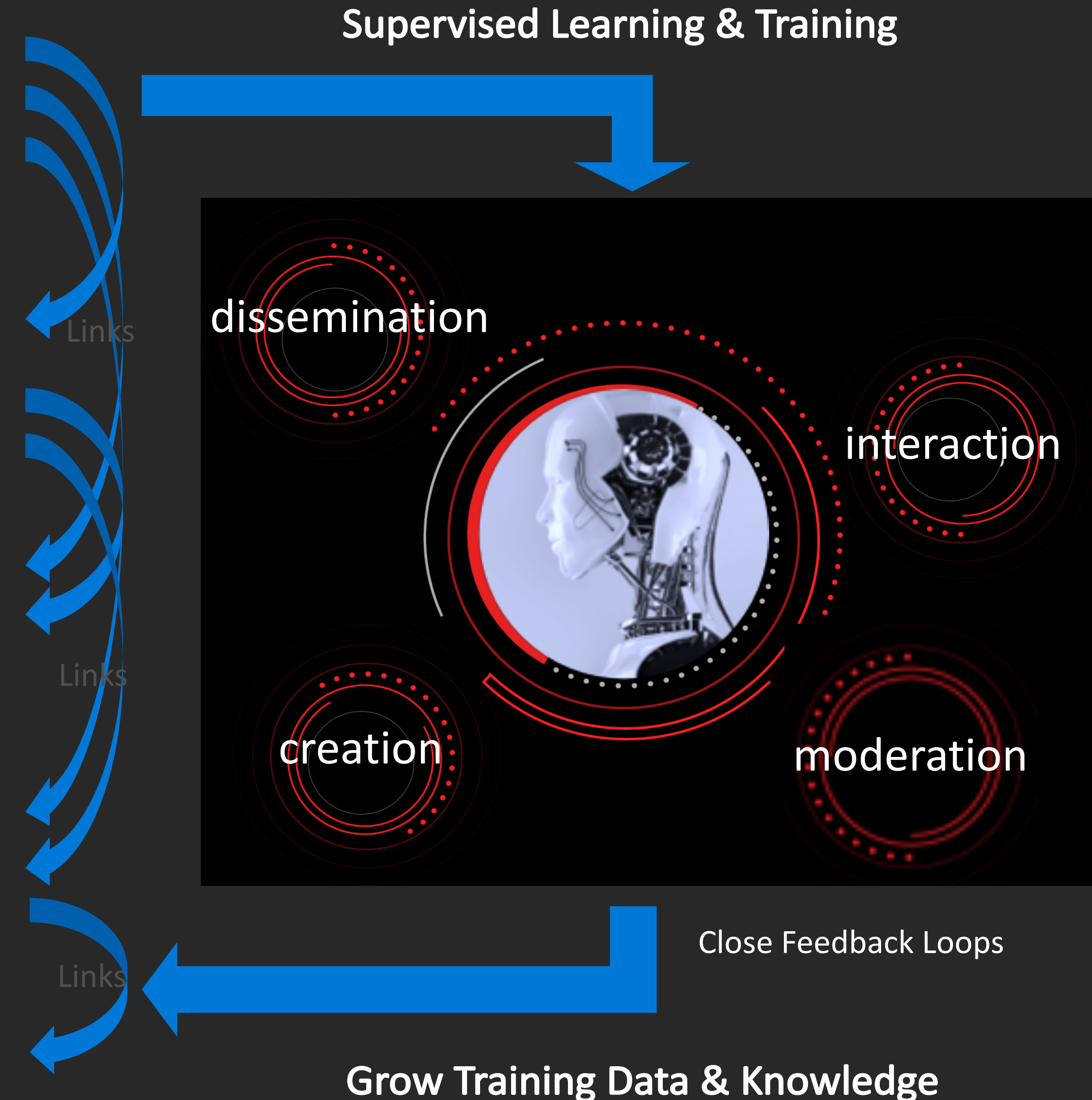
- <Subject, Predicate, Argument> triplets extracted from passages, assertions, facts, statements, etc.
- Semantic patterns
- Synonyms, acronyms, and alternative expressions of elements

Sentences + Relations (Q-R, Q-A Pairs)

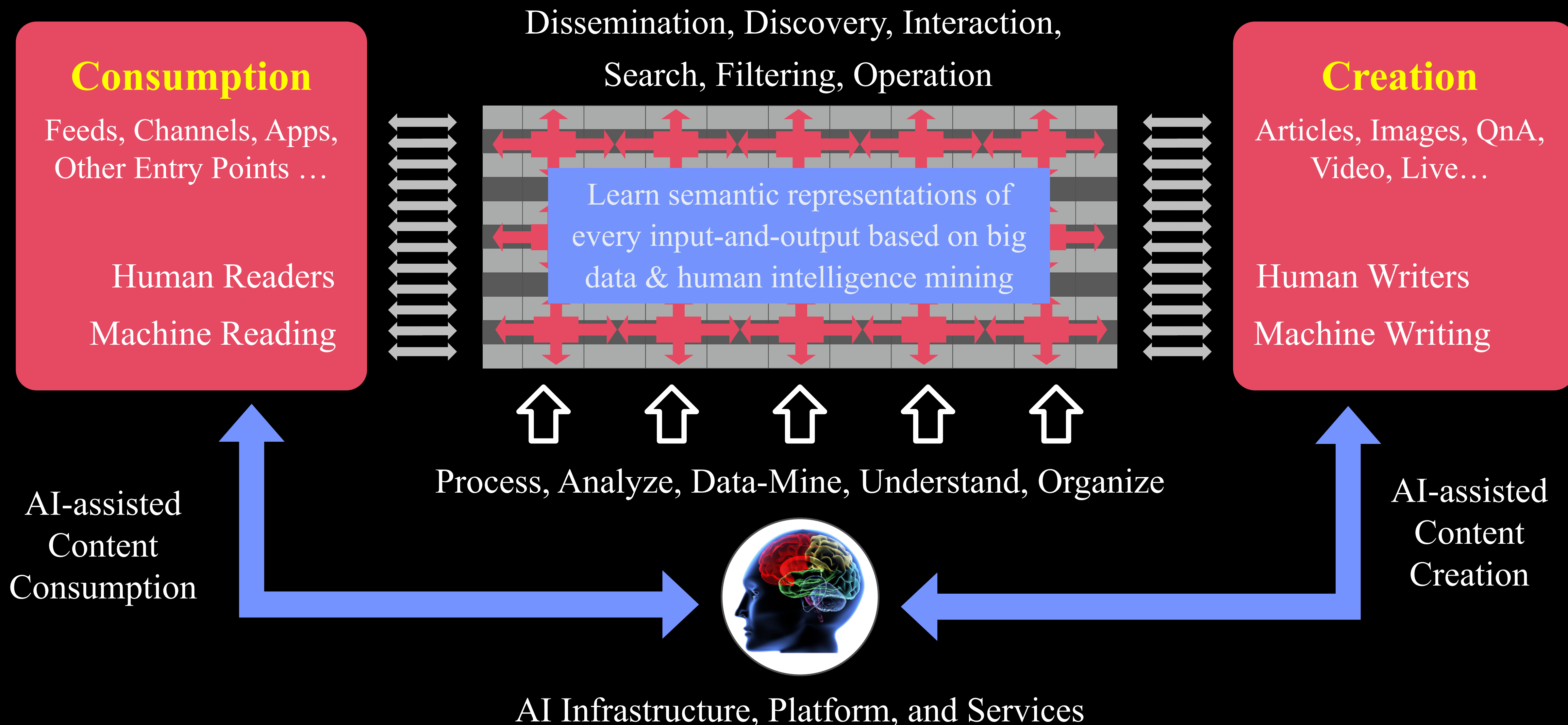
- <Query, Response> Q-R pairs (mined or scripted)
- <Question, Answer> Q-A pairs (mined or scripted)
- <Prev Sentence, Sentence, Next Sentence>: causality, discourse, context, or other relations among sentences

Articles + Relations

- Links between articles and feeds, channels; user access/behavior data



≡ New AI-Powered Information/Content Platform



≡ Toutiao AI Lab – Missions

- Advance the state of the art in the technical areas important to the company's current and future business
- Directly participate in and work on company's important products to integrate new technologies
- Attract and grow the best and brightest technical talents; create a continuous talent pipeline for the whole company

≡ Our Aspiration

- Use AI technologies to revolutionize how information/content is created, disseminated, discovered, consumed, and interacted by people socially
- Evolve/advance machine intelligence (AI) to next level through human and machine collaborative learning
- Work with the best and brightest people to make positive impacts to the world



TOUTIAO AI LAB
今日头条人工智能实验室

 THANK YOU
