面向未来的泛内容AI平台建设实践

阿里巴巴 总监 蔡龙军

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Agenda

- 文娱泛内容AI平台背景
  - 互联网发展的背景，对内容产业带来的冲击和生机
  - 建立娱大脑必要性
- 文娱泛内容AI平台整体规划
  - 三维立体分析平台规划
  - 基础设施深度学习平台DeepDriver介绍
- 文娱泛内容AI平台投资采买分析能力建设
- 文娱泛内容AI平台营销分析能力建设

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内容的时代：这世界很酷

《军师》~70亿，男性高知群体的最爱

Day & night 追凶 25亿

虐恋总是要100~200亿虐！！

爱情春风引爆暑期56亿

战狼2 票房 57亿！

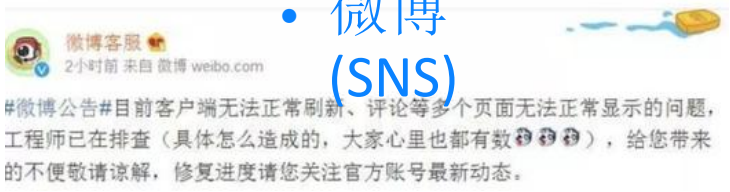
铁打的四大神兽，流水的明星

这些内容去哪里看呢？YouKu

这种变化影响是什么？

鹿晗恋爱了....，是件互联网大事

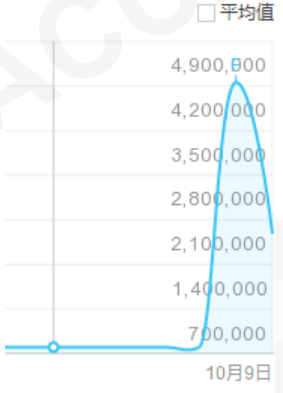
- 微博(SNS)



- 优酷(视频)

- 淘宝(电商)

- 百度(搜索)



- 王者荣耀(游戏)

暴打“关羽”，“姓关的就没有好东西”

- 婚纱摄影(传统)

“鹿晗就不是好东西，没拍完，我一个女客户穿婚纱跑了...”

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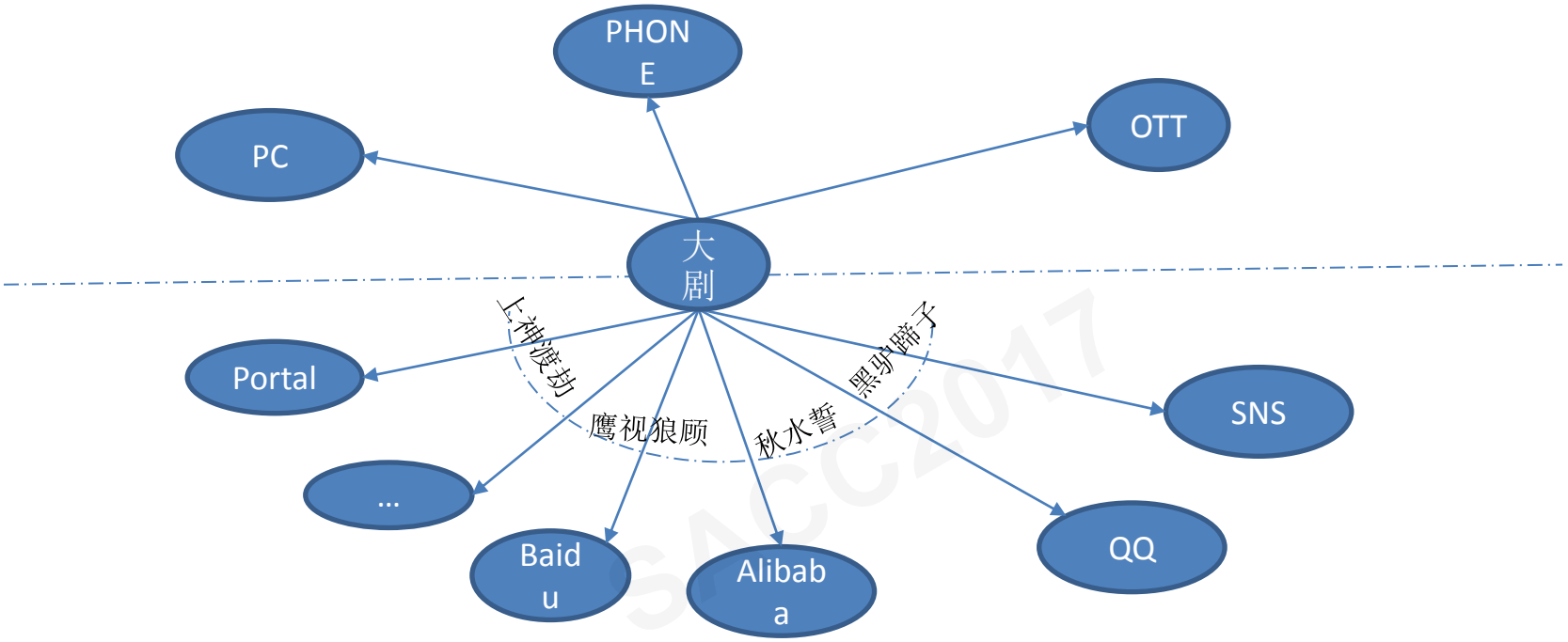
互联网娱乐化



- 那么把控文娱就要理解整个互联网和文娱相关的数据！

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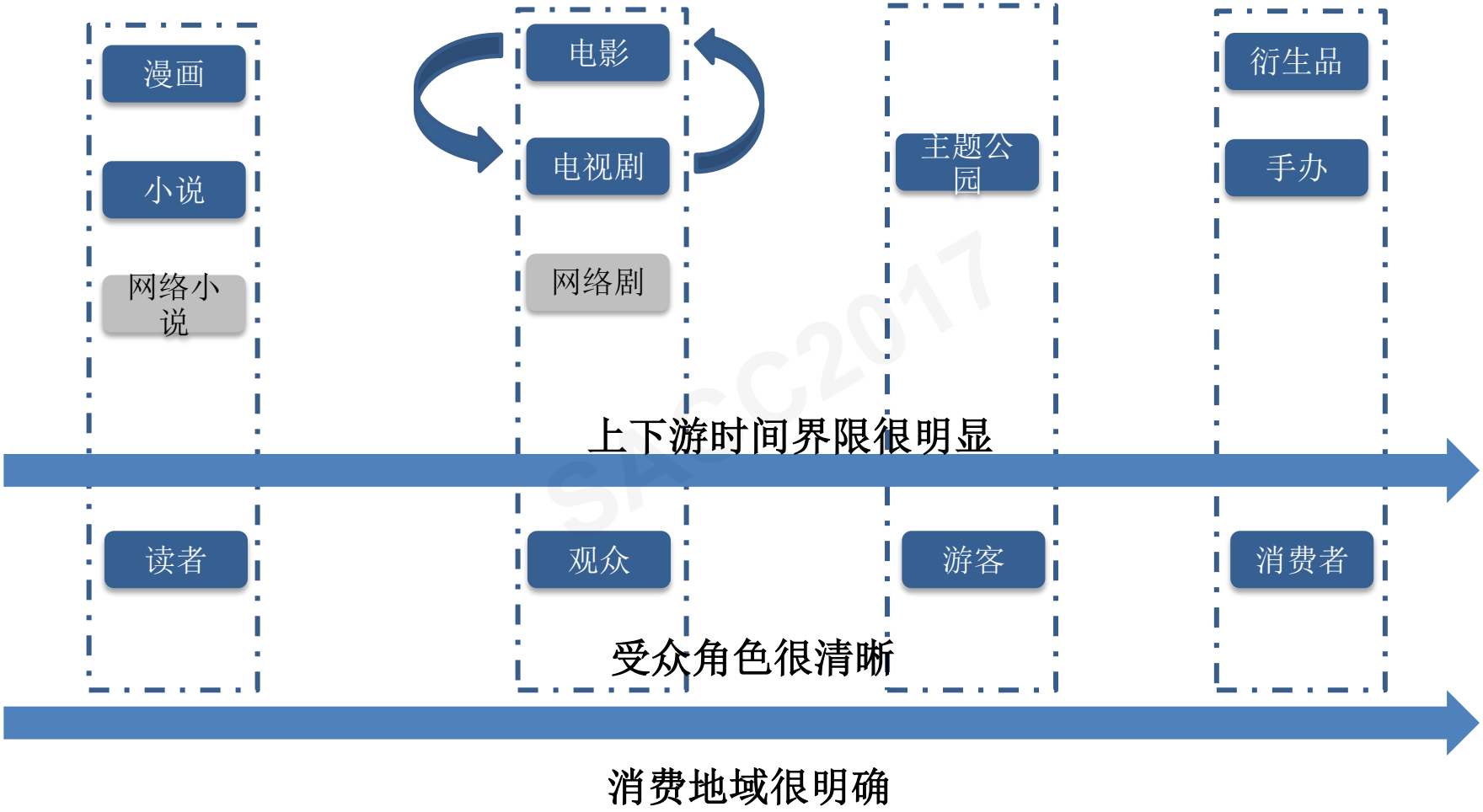
曾经的文化娱乐产业是条河



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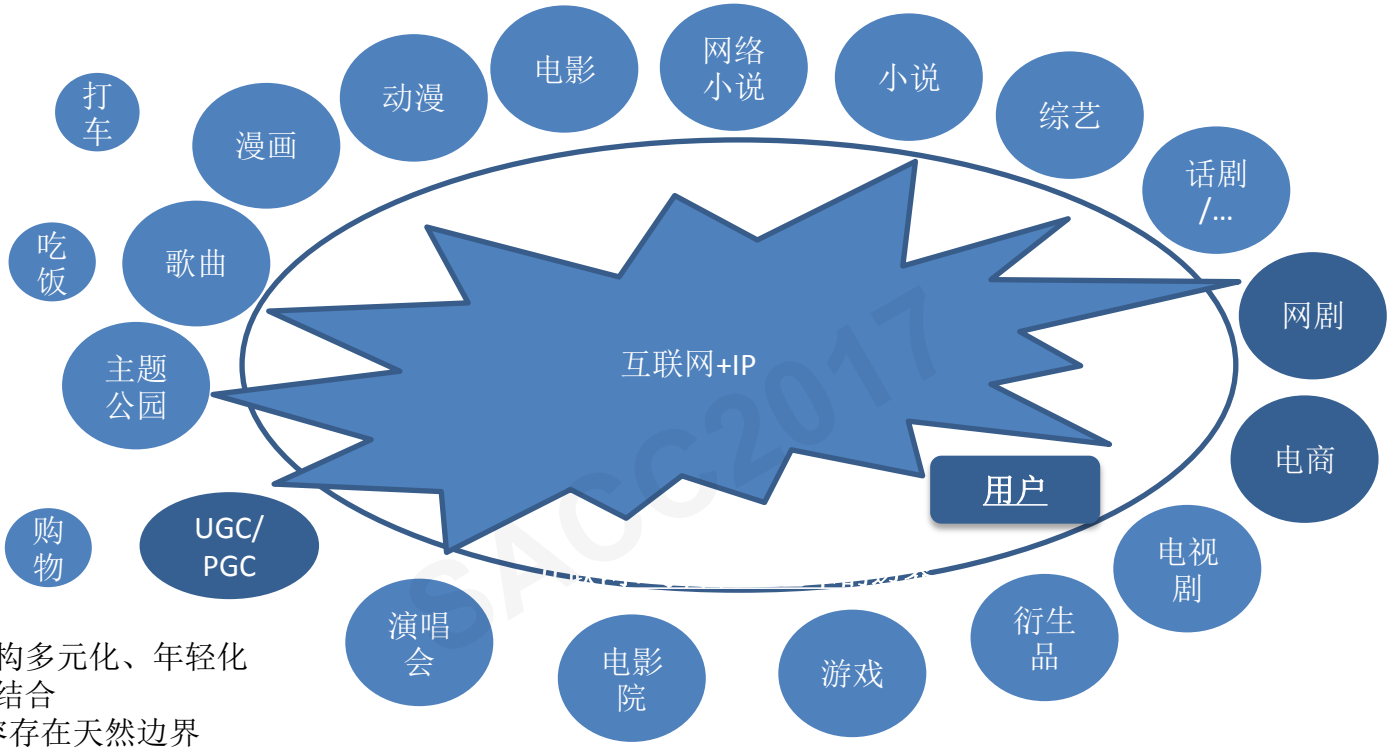
破坏原有土壤结构，也带来了新的形式



1.内容形式、结构多元化、年轻化
2.人才各种跨界结合
3.互联网+和内容存在天然边界
4.实时与预知

制作思路和内核都有了新的变化

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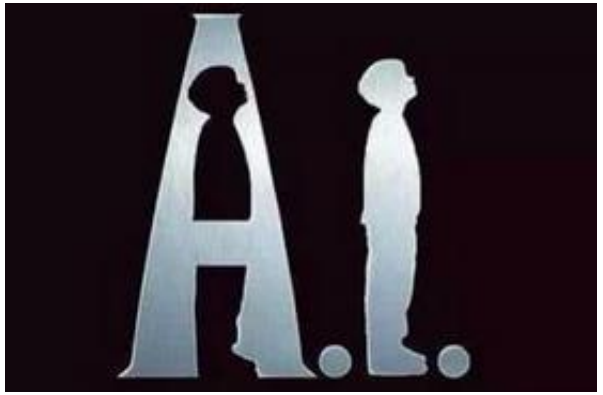
帮助人们理解内容：文娱泛内容AI平台

有生之年看不完的数据

所以，只能...

7*24并行计算+AI



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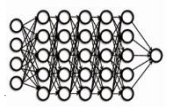
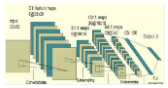
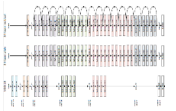
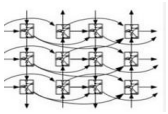
文娱泛内容AI平台：覆盖全生命周期

依托DeepDriver不断深入AI

传播生命周期、4P/4C、STEPPS经典理论在业务上应用

智能化需求挖掘

智能化运营

智能化制作

智能化营销

智能化投资

生命周期整合

可传播的抽象或者具象对象实体

歌曲 ..... 出版物 话剧 小说 漫画 事件 游戏 资讯 地点 新闻 音乐 电视剧 综艺 体育 电影 动漫

贯通多文本、全生命周期上下游数据网络体系

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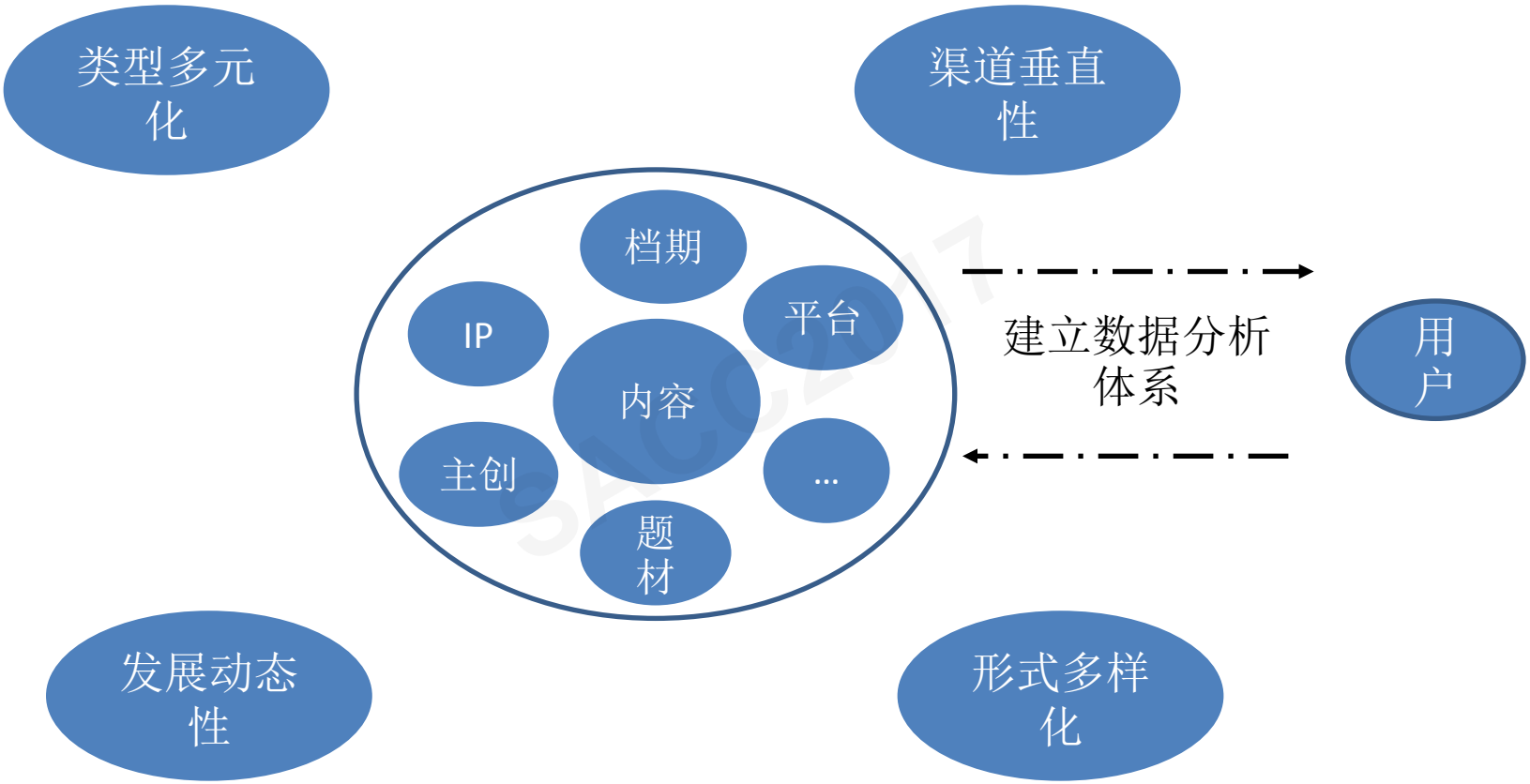
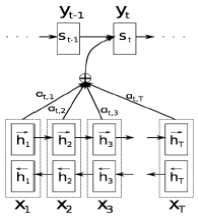
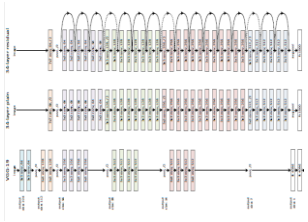
数据体系建设：从上帝角度进行思考



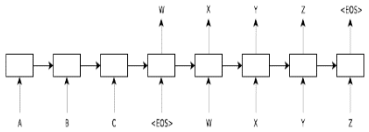
自研的深度学习平台DeepDriver



AttentionModel

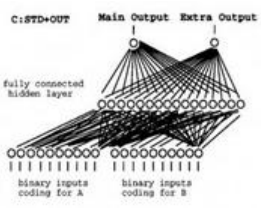


VGG&ResNet



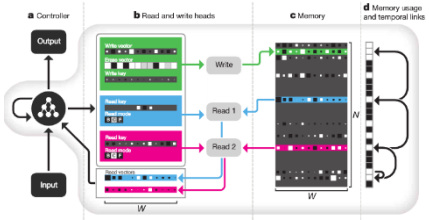
Encoder-Decoder

复杂DL层

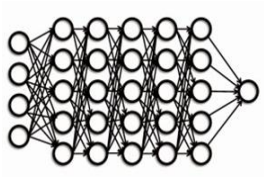


Seq2Seq

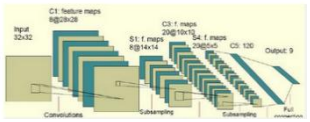
MTL



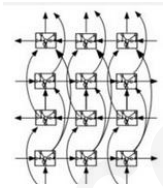
DNC



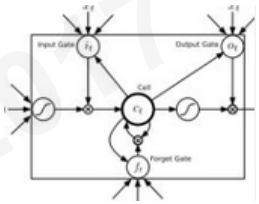
DNN



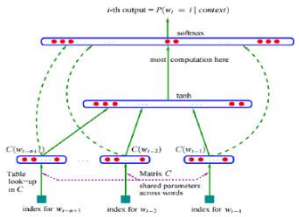
CNN



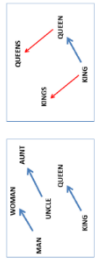
基础DL层



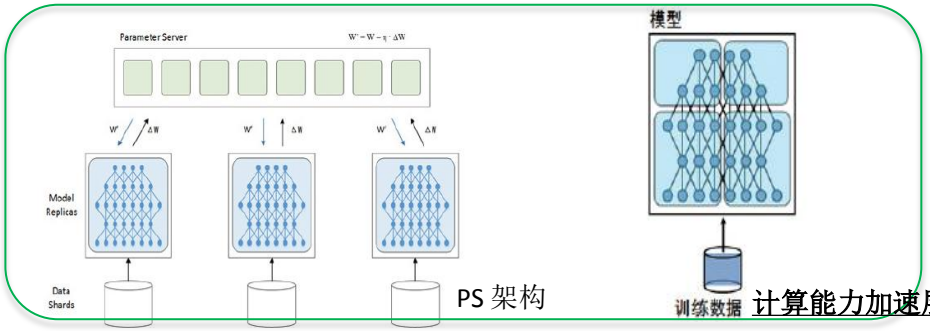
RNN/LSTM



NN-LM



W2V



PS 架构

计算能力加速层

FPGA

芯片级

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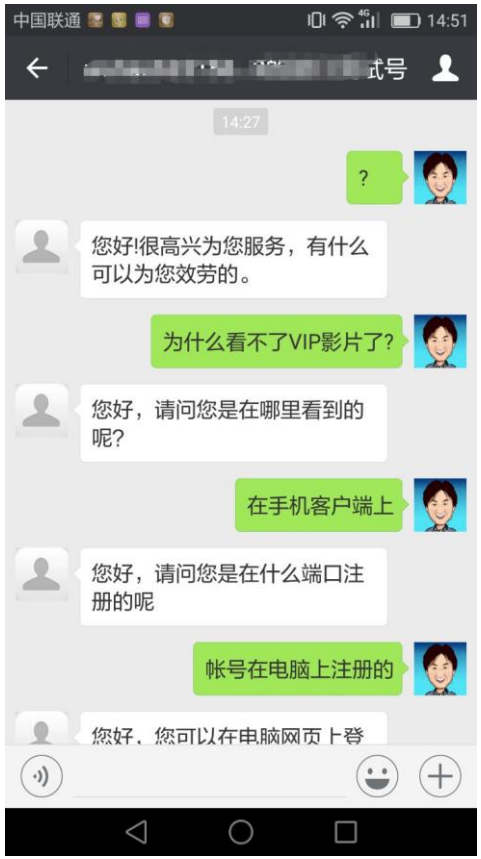
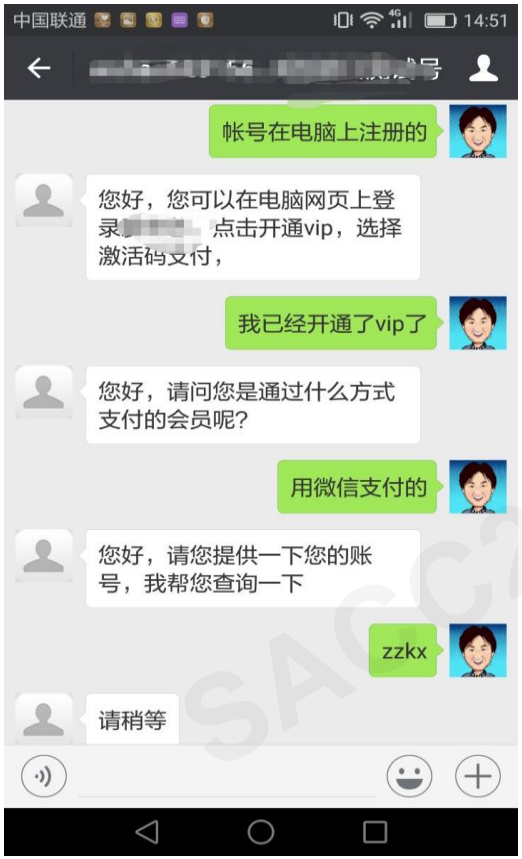
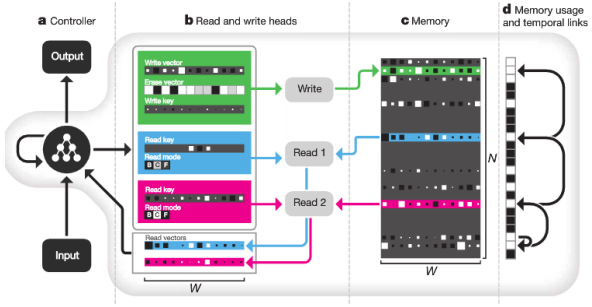
DeepDriver应用的例子



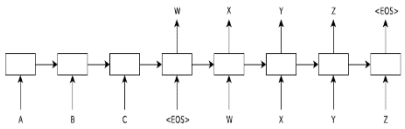


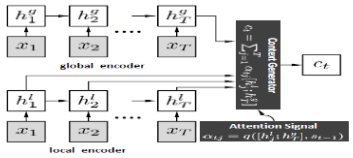


- 例如给个短文：
- “小明带个球去操场，小明抱着球回到教室，小明抱着作业去老师办公室”
- 测试：

“小明在哪里”，答案是“办公室”

“球在哪里”，答案是“教室”





- 纯JAVA开发，轻量级(几万行代码，极少第三方依赖包)
- 着眼于先进的人工智能算法实践
- 开源平台https://github.com/LongJunCai/DeepDriver

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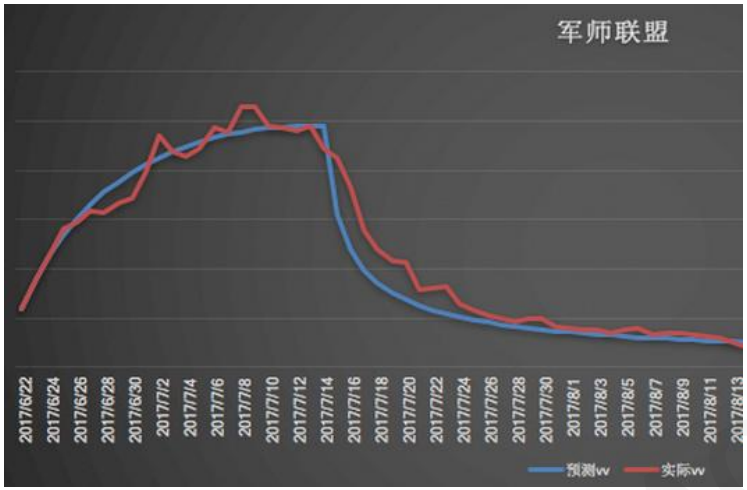
文娱泛内容AI平台投资采买分析能力建设

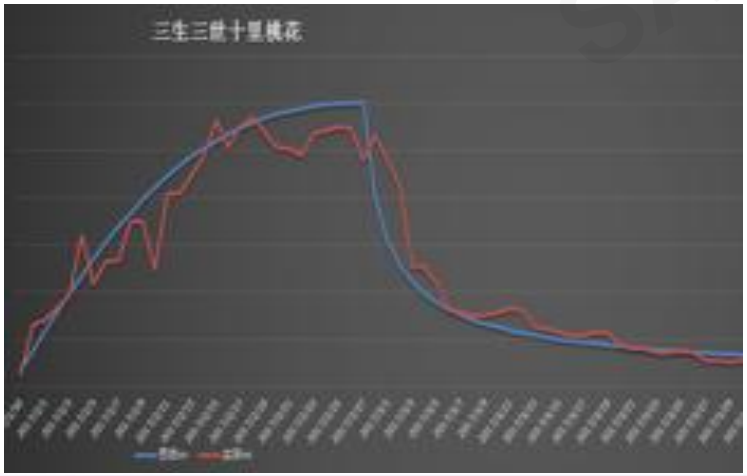
- 预测准确率：提前**1年预测：80%+；**

准确率92%

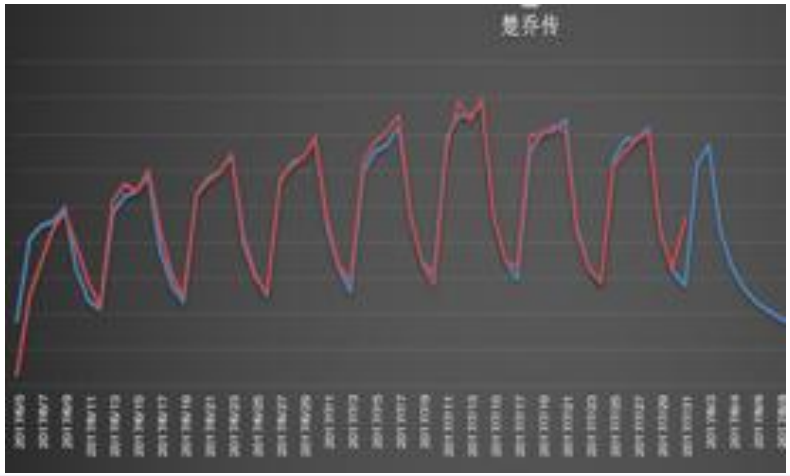


准确率97%+

准确率90%



准确率92%

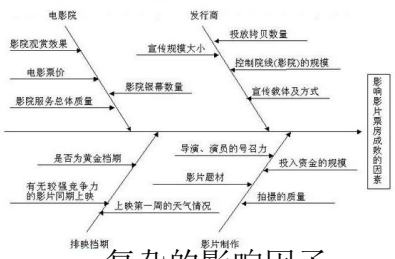


黑盒学习存在的困难与挑战

- 常规的预测思路：数据+简单模型、数据+逼近能力强黑盒模型
- 常规思路本质：黑盒模型逼近真相
- 存在问题：
  - 复杂机制很难通过样本进行覆盖
  - 很难深入理解问题本质
  - 很难跨领域进行举一反三学习

具有生命周期

竞争博弈



复杂的影响因子

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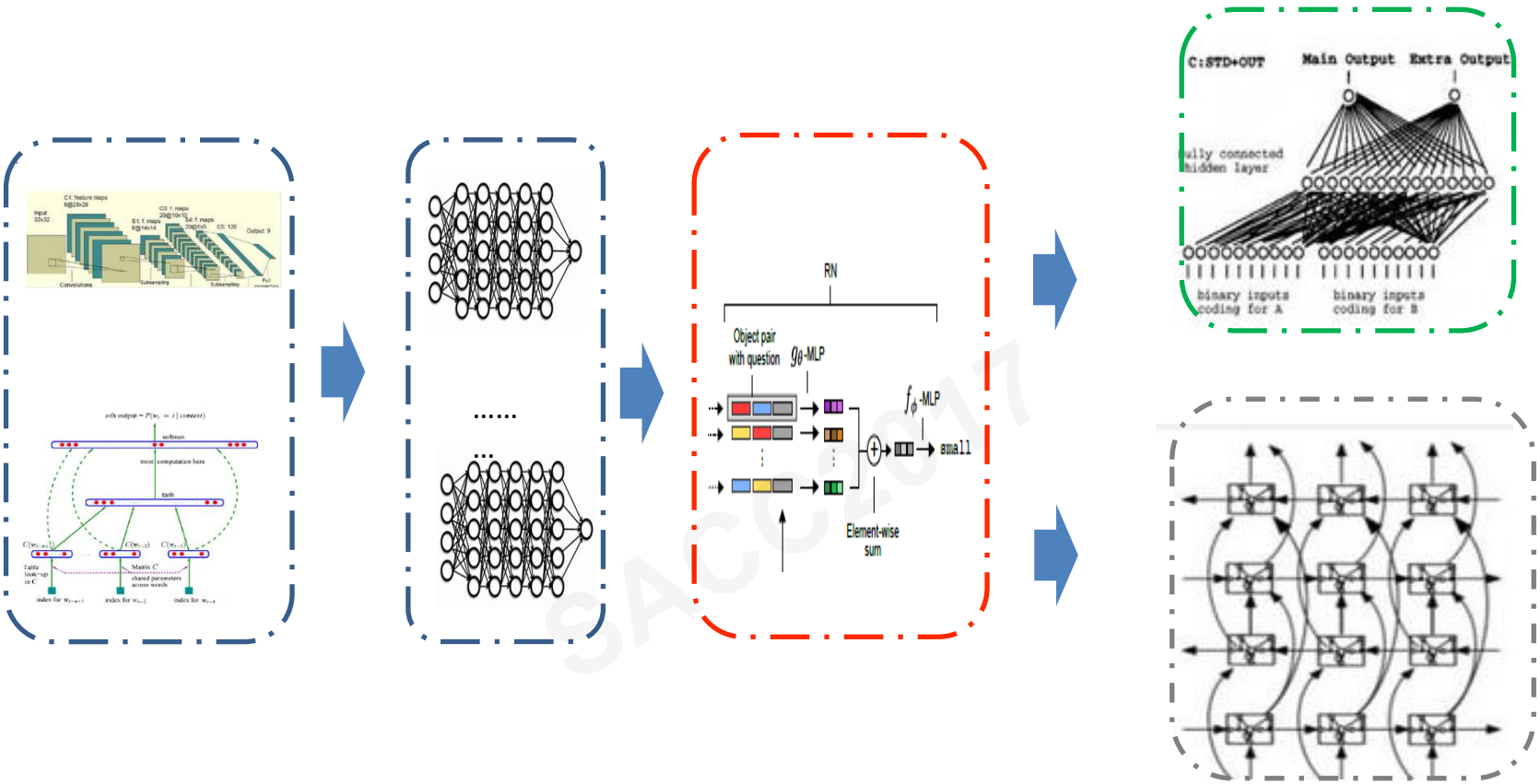
基于机制建模构造复变预测模型



- 建立了一个端到端的混合预测模型：Embedding CNN+DNN+RN+MTL+LSTM

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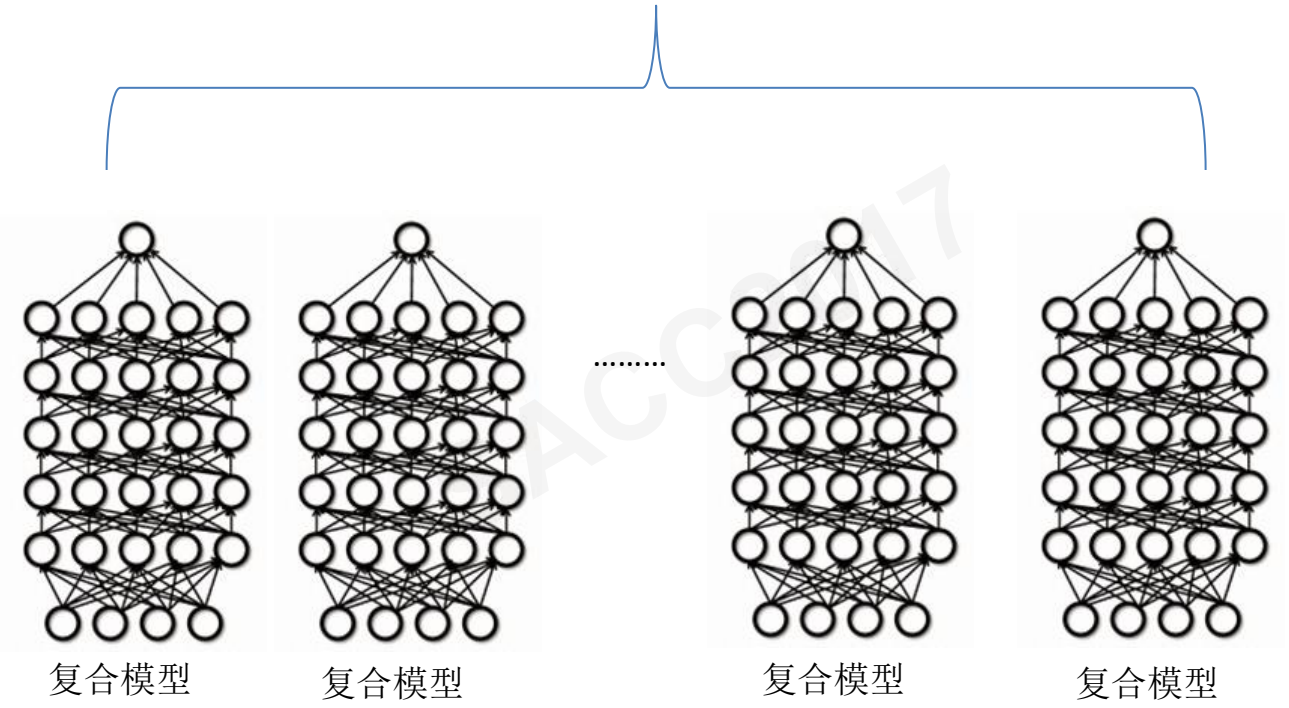
最终模型：组合多个模型结果

Thousands of DL make dynamic decisions



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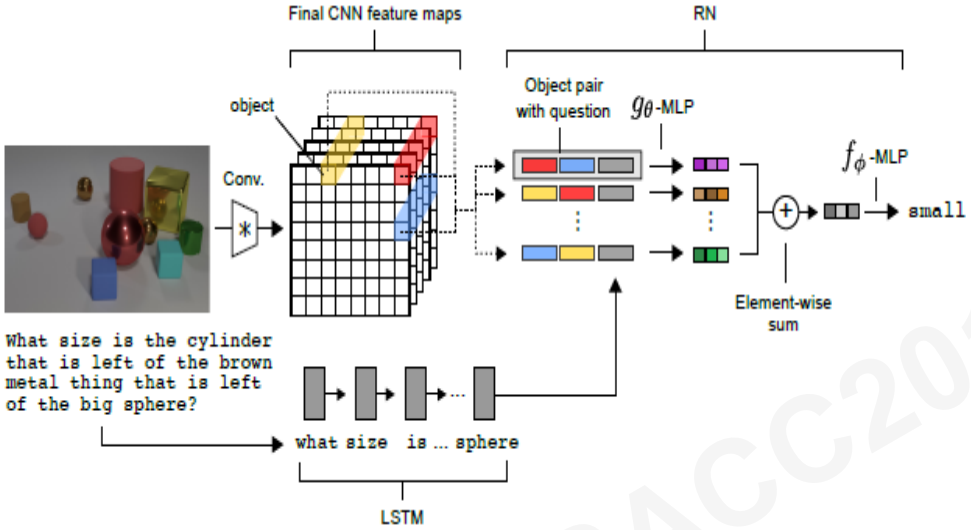
Relation Net



$$RN(x_1, x_2, \ldots, x_n) = f_\varphi\left[\sum_{i=1}^{n-1} g_\theta(x_i, x_n)\right]$$

f_φ 和 g_θ是多层感知器 MLP

- 准确率有超过5%的提升

Adam Santoro, *A simple neural network module for relational reasoning*

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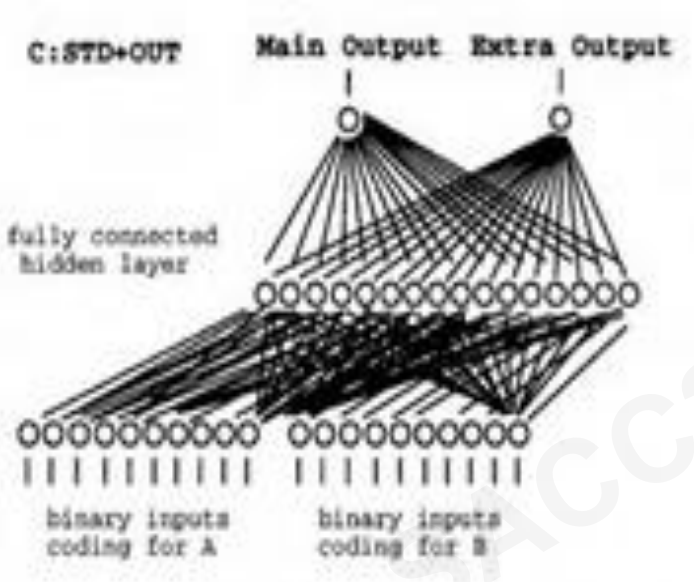
MTL—Multiple Task Learning



（1）隐式数据增加机制
（2）注意力集中机制
（3）窃听机制
（4）表示偏置机制
（5）正则化机制

- 泛化能力提升接近20%提升

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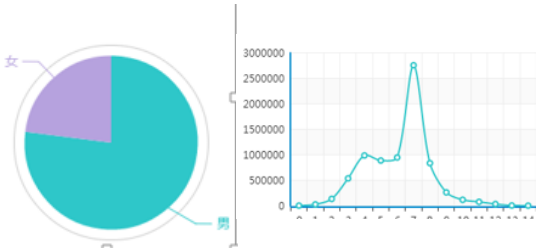
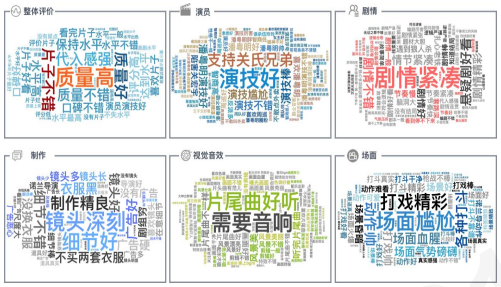
营销推广分析

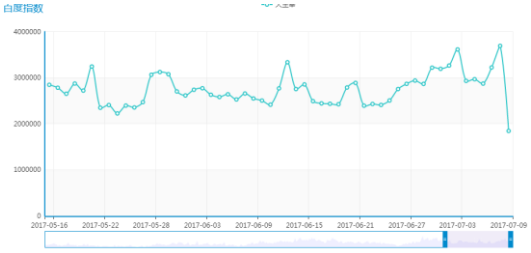
受众分析



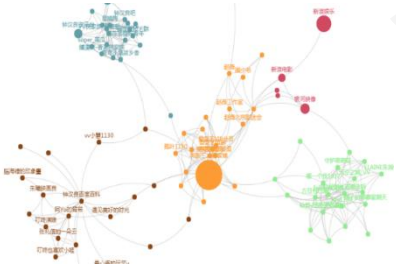
主题分析



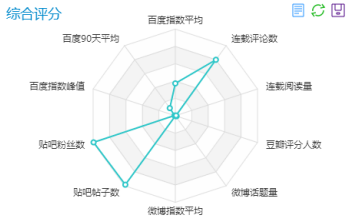
热度分析



社区分析



渠道分析



评分维度	该项最大数值	该IP该项数值	该项排名
百度指数平均	707420	264197	8
百度90天平均	1257186	121458	36
百度指数峰值	1266622154	3040703	16
贴吧粉丝数	5650486	5650486	1
贴吧帖子数	140744323	140744323	1
微博指数平均	5260694	2378	4532
微博话题量	77534000	83000	1025
豆瓣评分人数	289041	4551	560
连载阅读量	3653388141	14581100	365
连载评论数	1627814	1308432	4

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营销推广分析-白夜追点啥？

- 整体集中在演员、整体评价和剧情上

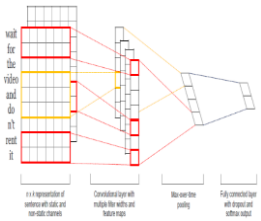
- 为潘粤明打Call，剧情精彩紧凑，场面镜头血腥恐怖，道具逼真，片尾曲好听（!!）

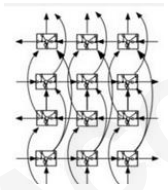
NLP模型

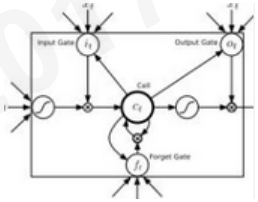
应用模型

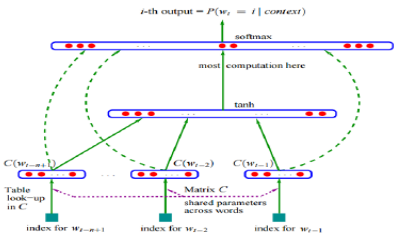
情感分类 | 意见提取与归类 | .... | 去噪音

通用模型









基础模型

分词 | 命名实体识别 | .... | 语法分析

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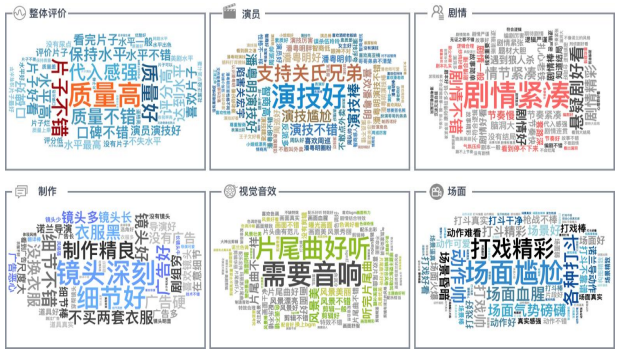
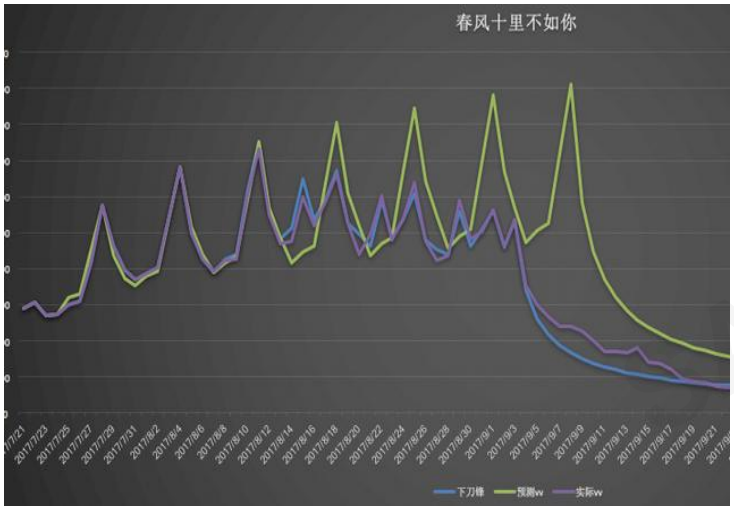
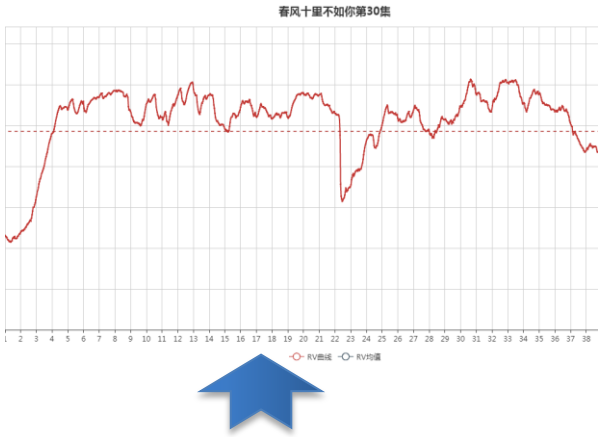
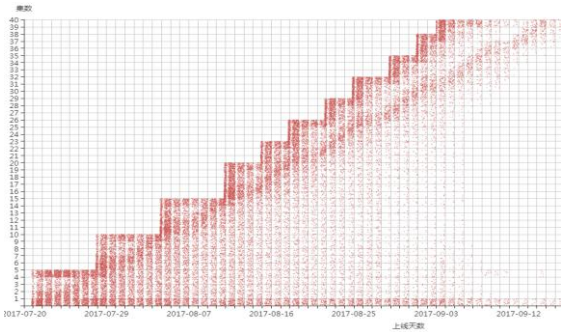
建立运营分析闭环

运营决策









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总结

- 内容产业发展特点
  - 互联网连接人与高效服务，加速了文娱内容向互联网各种应用进行渗透
  - 移动互联网对内容产业的冲击改变了不同内容形式发展规律
- 建立内容三维立体AI分析平台可以有效帮助内容产业适应新发展趋势
- 针对发展呈现机理进行更深入的建模将成为一种趋势
- 随着人工智能技术的不断发展，模型的表达能力将得到进一步加强，也会推动行业奔向新的高度!

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欢迎加微信！


THANKS