

深度学习

课程安排

引领未来人工智能





目标

- 介绍深度学习经典和最新模型
 - LeNet, ResNet, LSTM, BERT, ...
- 机器学习基础
 - 损失函数、目标函数、过拟合、优化
- 实践
 - 使用Pytorch实现介绍的知识点
 - 在真实数据上体验算法效果

内容



- 深度学习基础 -线性神经网络，多层感知机
- 卷积神经网络 -LeNet, AlexNet, VGG, Inception, ResNet
- 优化算法 - SGD, Momentum, Adam
- 高性能计算 -并行，多GPU,分布式
- 计算机视觉 -目标检测，语义分割



形式

- 算法讲解
- 代码讲解
- 随堂练习



你将学到什么

- What

- 深度学习里有哪些技术

- How

- 如何实现和调参

- Why

- 背后的原因（直觉、数学）



AI相关从业人员

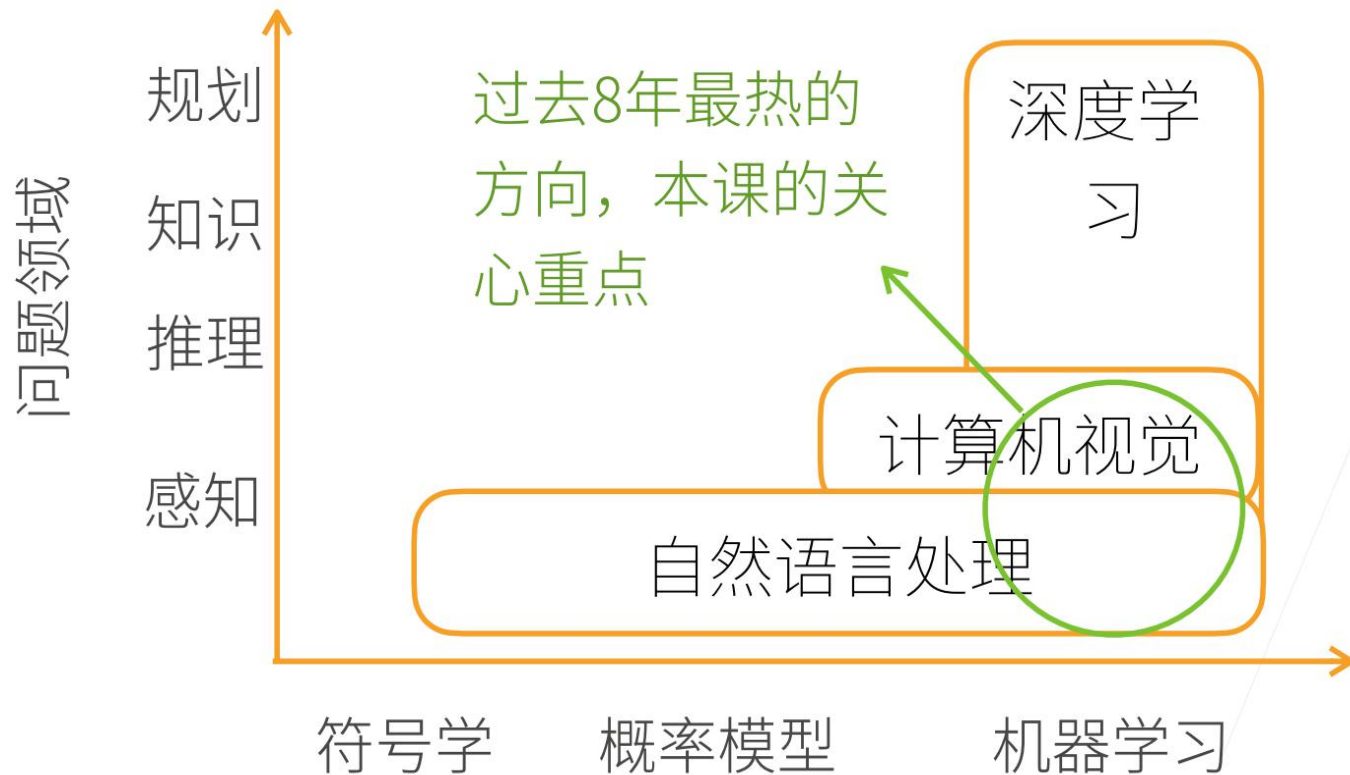
数据科学家、
工程师

研究员、
学生

深度学习介绍



AI地图



图片分类



<http://www.image-net.org/>

<https://github.com/LiuHaiChuanO/2021-Deep-learning>

图片分类

100%
wrong

75 **In the competition's first year** —teams
had varying success.
Every team got at least 25% wrong.

50 **In 2012**, the team to first use deep
learning was the only team to get
their error rate below 25%.

25 **The following year** nearly
every team got 25% or fewer
wrong.

perfect **In 2017** 29 of 38 teams got
less than 5% wrong.



<https://qz.com/1034972/the-data-that-changed-the-direction-of-ai-research-and-possibly-the-world/>

<https://github.com/LiuHaiChuanO/2021-Deep-learning>



物体检测和分割



样式迁移



<https://github.com/StacyYang/MXNet-Gluon-Style-Transfer>

人脸合成



Karras et al, ICLR 2018

文字生成图片

TEXT PROMPT

an illustration of a baby daikon radish in a tutu walking a dog



TEXT PROMPT

an armchair in the shape of an avocado [...]



无人驾驶



MOTION FLOW

LANE LINES

LANE LINES

ROAD FLOW

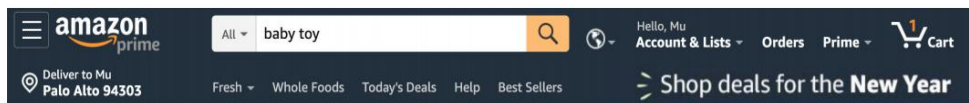
IN-PATH OBJECTS

ROAD LIGHTS

OBJECTS

ROAD SIGNS

案例研究一广告点击



1-48 of over 30,000 results for "baby toy"

Sort by: Featured ▾

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☐ ☒ prime | FREE Same-Day
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Delivery Day

☐ Get It Today
☐ Get it by Tomorrow

Pantry

☐ prime pantry

Prime Wardrobe

☐ prime wardrobe

Local Stores

☐ Amazon Fresh
☐ Whole Foods Market

Department

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Baby Musical Toys
Stuffed Animals & Plush Toys
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★★★★☆ ~ 81



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★★★★☆ ~ 84

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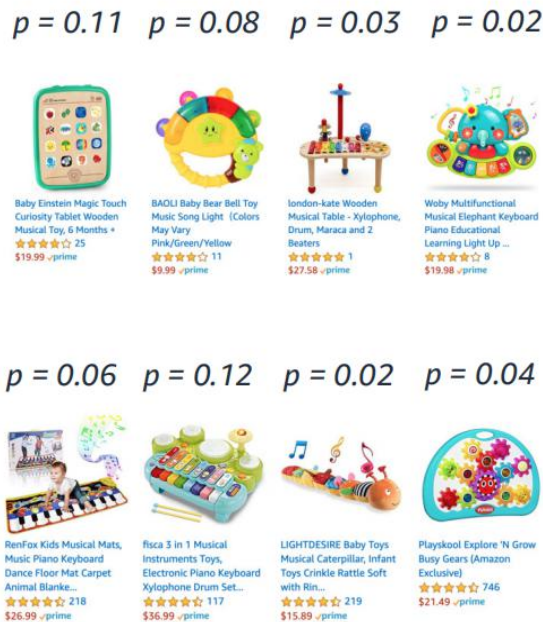
案例研究-告点击



触发

点击率预估

排序 (点击率 \times 竞价)



预测与训练

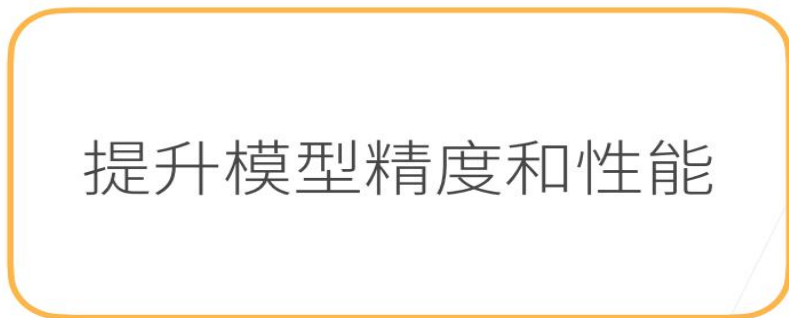


完整的故事

领域专家



数据科学家



AI 专家

安装教程

参考Github主页

<https://github.com/LiuHaiChuanO/2021-Deep-learning>