REAL-TIME OBJECT DETECTION BASED ON CNN

唐翼 (Tang Yi), 赵迪 (Zhao Di)
Belarusian State University of Informatics and Radioelectronics
e-mail: tangyijcb@gamil.com, 3189124246@qq.com

Summary. *Computer vision, also known as CV, which can gain high-level understanding from digital images or videos. The real-time object detection has been used in many fields, such as people counting, unmanned supermarket, photo focus in cameras and so on. This paper introduces the difficulties in real-time object detection and developments and applications in China.*

Many fields are covered under machine learning, such as natural language processing (MLNLP), computer vision, time series processing, etc. Among them, computer vision is very popular, and it has a wide range of applications, such as education, medical care, transportation, social security and so on. This paper is an introduction to the difficulties of real-time target detection at this stage and also the application and development of real-time target detection in China.

In computer vision, significant advances have been made on real-time object detection with the rapid development of deep convolutional neural networks (CNN). When it comes to small object, the accuracy of deep learning methods is low. Small object detection is a fundamental computer technology related to image understanding and computer vision that deals with detecting instances of small objects of a certain class in digital images and videos. There are mainly two definitions of small objects. One refers to objects with smaller physical sizes in the real world. Another definition of small objects is mentioned in MS-COCO metric evaluation. Objects occupying areas less than and equal to 32×32 pixels come under "small objects" category.

Below is the principle about how real-time object detection works:

In the real-time object detection task, the main and most complex task is the training model part. A large number of manually labeled datasets need to be collected, which consumes a lot of human resources. In addition, training on annotated datasets takes a considerable amount of time.

The hardware of the real-time target detection system is mainly a sensor (such as a camera), a computer and a cloud server; the design of the video image part of the face recognition system is more complicated – firstly, the video image information detected by the sensor in real time needs to be uploaded to the local computer or It is a remote server, and then the computer or server uses the pre-trained neural network to process the received video pictures, and finally completes the target detection and the positioning and labeling of the target. In order to improve the real-time detection rate, after continuous optimization, the FPS is getting higher and higher. In addition, in order to improve the detection accuracy of small objects, the weight of small object parameters can also be modified in the loss function to optimize the imbalanced detection of large and small objects caused by weight imbalance.

Since the beginning of the 21st century, with the rise of deep learning, especially the development of object detection, the way of life of the Chinese people has undergone tremendous changes. In the 2017 Alibaba Cloud unmanned supermarket experiment, object detection combined with face recognition technology can make shopping more convenient. In some mobile phone camera software and camera equipment, the principle of focusing face technology is also a branch of factual object detection. This solves the problem of out-of-focus caused by distance or movement when people take pictures. Real-time target detection technology has also been applied in major colleges and universities. Teachers can count the class attendance rate according to the number of identified targets instead of clicking them separately. In addition, a lot of attention is paid to the use of Baidu's driverless taxis, which have been put into sites in many areas of Beijing. These vehicles use real-time object detection technology to judge and identify obstacles in the current road, people, sidewalks, etc. Series object. Thereby reducing traffic accidents caused by mistakes in the process of human operation.

The small object target detection technology in the real-time target detection task can also be used for flaw detection of some precision instruments, such as whether the pipeline is leaked, damaged, etc.

Real-time target detection technology brings many benefits to our lives, but the detection accuracy and detection speed of real-time target detection technology for centimeter-level and millimeter-level objects still need to be greatly improved. The popularization of this technology in the current society still has certain difficulties. We still need to constantly explore and combine the realization and improvement of new fields.

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新冠肺炎期间的品牌传播趋势

徐琦 (Xu Qi)
白俄罗斯国立大学(Belarusian State University)
e-mail: 370334895@qq.com

Summary. *During the COVID-19 epidemic, it has become difficult to develop numerous global and national brands. On the other hand, new ideas and projects have increased the brand's arsenal of communication tools. Let's note the most important trends that are typical for brand communication strategies during the period of coronavirus restrictions.*

在 COVID-19 流行期间，开发众多全球和国家品牌变得困难。另一方面，新想法和项目增补品牌的沟通工具库。 让我们注意冠状病毒限制期间品牌传播策略的典型最重要趋势。

1. 诉诸普世话题。家庭价值观、友谊、爱情、互助——所有这一切都在一个极其不稳定和难以预测的时期给人一种稳定的感觉。出于这个原因，这些主题在品牌的视觉范围和信息中都能有效实施。 "为了亲人，为了友谊，为了家人……我们呆在家里，"说唱歌手巴斯塔在海飞丝社交活动中用这句话表示支持自我隔离。

2. 实施额外措施以克服冠状病毒。在大流行初期，为客户提供在线商品展示的服务显示出积极增长。现代汽车品牌为在 2020 年 3 月至 2020 年 4 月失业并购买汽车的司机提供长达 6 个月的汽车费用补偿。

3. 为公司提供公共利益的机会。视频游戏开发商和发行商 Rockstar Games 已承诺将其最受欢迎的 RDR Online 和 GTA Online 产品的所有利润的 5% 捐赠给 COVID-19 大流行基金，而微软和谷歌暂时开放了对其 b2b 视频会议产品的免费访问.

4. 帮助人们在变化的条件下保持他们的习惯生活方式。一些健身中心为那些希望在自我隔离期间保持健康和坚持健身的人提供免费在线锻炼，而奥迪，为那些被迫呆在家里，不能开车的人，录制了一小时的行驶的视频。

5. 渴望为抗击冠状病毒做出贡献。 Yandex.Taxi 服务为医生提供免费出租车服务联合利华为诊所提供免费肥皂和消毒剂，伦敦 ExCeL 展览中心成为可容纳 4,000 人的临时医院，为英国国家卫生服务局提供了容纳冠状病毒患者的空间。 Kantar 国际公司集团开展了一项"COVID-19 俄罗斯晴雨表"研究，并确定了消费者对品牌的期望是实用、现实、有助于日常生活和对抗焦虑，以及在克服危机方面发挥领导作用。 由于 COVID-19 限制无限期存在，公司应利用这项研究的结果，继续将冠状病毒纳入日常议程，使传播适应不断变化的现实。

我们可以为品牌制定以下建议，以在当前条件下与消费者进行最佳互动。 在大流行期间，公司应审核其促销活动。首先，应注意传播策略，在多大程度上与瞬息万变的形势相对应，是否违反既定规则和规定。 肯德基于 2020 年 3 月推出了一系列广告，人们在广告中通过舔手指来展示吃东西的乐趣。英格兰、威尔士、苏格兰和爱尔兰的居民认为肯德基的视频不卫生和不负责任，助长了冠状病毒感染的传播。在向广告标准局提出多次投诉后，这