O. D. Melnyk

D. P. Tolstaya

D. Y. Sotula

APPLICATION OF COMPUTER VISION

Вінницький національний технічний університет

Анотація

У доповіді розповідається про застосування комп'ютерного зору, розглядаються його перспективи та можливості.

Ключові слова: комп'ютерний зір, штучний інтелект, застосування у продуктах

Abstract

The report discusses the use of computer vision, examines its prospects and opportunities.

Key words: computer vision, AI, product applications

Computer vision is the field of computer science that focuses on replicating parts of the complexity of the human vision system and enabling computers to identify and process objects in images and videos in the same way that humans do. Until recently, computer vision only worked in limited capacity.

Early experiments in computer vision started in the 1950s and it was first put to use commercially to distinguish between typed and handwritten text by the 1970s, today the applications for computer vision have grown exponentially[1].

Nowadays computer vision allows you to add a qualitatively different work with images and video to the product – now the system, after some training, can understand what is displayed on the user's photo, analyze the content of the video or classify objects from the video stream. Here is a short list of cases of using it in products:

1. Face Recognition – face comparison for identification. The person's face is unique, modern AI technology allows you to compare faces with an accuracy close to 100%.

2. Search Face – it can be used to protect against duplicates when creating a client base, to recognize a client by photo or video, for face-based access control systems. The most famous and controversial example is the FindFace product by NtechLab, which made possible to search by face in the VKontakte user database.

3. Head Pose Estimation – makes possible to determine the tilt and rotation of the user's head in the video along three axes.

4. Optical Character Recognition – reading text from a photo. It starts with defining the boundaries of the document and highlighting the semantic parts. Then comes the character recognition. The task is complicated by the fact that photographs on a smartphone are usually taken not at right angles to the document[2].

Facebook uses facial recognition ("DeepFace") when automatically tagging photos that are posted to your profile. After negative feedback from many audiences due to privacy, Facebook only allows the recognition is for opt into it.

Amazon unveiled 18 AmazonGo stores where shoppers can bypass lines and pay for items right away. With computer vision, cameras are used to let employees know when something was taken off the shelves. It can also identify returned items or removed items from a shopping cart. Tracking each person inside the store at all times makes sure each shopper pays for the merchandise.

Computer vision is a hot topic in the car industry. Companies like Tesla and Google are building self-driving cars. Cars today have Adaptive/Dynamic Cruise Control that has the ability to maintain a safe distance from the vehicles ahead. According to the World Health Organization, more than one million people are killed every year in car accidents largely due to driver's negligence. It will be interesting to note the change in data from car deaths once computer vision is fully installed into our vehicles[3].

Conclusion

Today we are witnessing the spread of novel AI technologies with surprising potential. By using new technologies, company earn better and save money. Computer vision helps to exclude risks and fraud, ensure totally secure processes and refine customer satisfaction.

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Мельник Олеся Дмитрівна – кандидат філологічних наук, старший викладач кафедри іноземних мов Вінницького національного технічного університету, м.Вінниця, prysyazhnalesya@gmail.com.

Сотула Дмитро Юрійович – студент групи 1КН-18б, факультет інформаційних технологій та комп'ютерної інженерії, Вінницький національний технічний університет, м. Вінниця, sotula.d@gmail.com

Толстая Дар'я Петрівна – студентка групи 1КН-18б, факультет інформаційних технологій та комп'ютерної інженерії, Вінницький національний технічний університет, м. Вінниця, dasha.tolstaya18@gmail.com .

Melnyk Olesya Dmitrievna – Candidate of Linguistics' Department, Senior Lecturer of Foreign Languages Department in Vinnitsa National Technical Universety, Vinnytsa, prysyazhnalesya@gmail.com.

Sotula Dmytro Yuriyovych – group 1KN-18b Faculty of Information Technology and Computer Engneering. Vinnytsia National Technical University, Vinnytsia, sotula.d@gmail.com

Tolstaya Daria Petrivna – group 1KN-18b Faculty of Information Technology and Computer Engneering. Vinnytsia National Technical University, Vinnytsia, dasha.tolstaya18@gmail.com .