

About Us

Dwango Media Village is a R&D section of DWANGO Co.,Ltd in Japan. Dwango Media Village conducts research in the fields of machine learning, computer vision, computer graphics, audio processing, and game AI.

WEB

<https://dmv.nico>



Twitter

@Dwango_DMV



Research

Multiple images style transfer

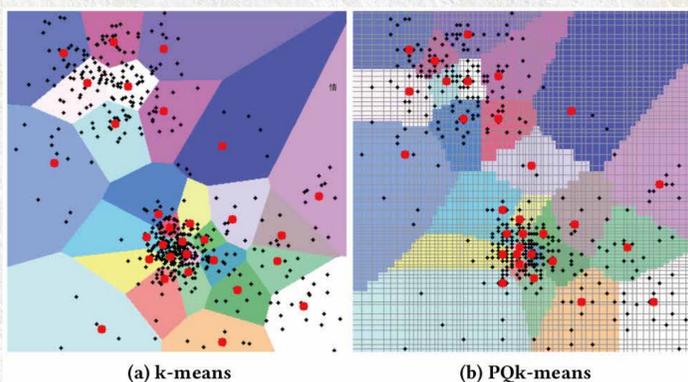
[SIGGRAPH Asia 2016]



Transfer the desired style of artwork style to an arbitrary image and learn this style. Our method is based on the observation that the style of artwork is not characterized by the features of one work, but rather by the features that commonly appear within a collection of works. To learn the features that commonly appear within a collection of works, a sufficiently large dataset of images created in the same style is necessary. We present a novel illustration dataset that contains 500,000 images mainly consisting of digital paintings, annotated with rich information such as tags, comments, etc. We utilize a feature space constructed from statistical properties of CNN feature responses, and represent the style as a closed region within the feature space.

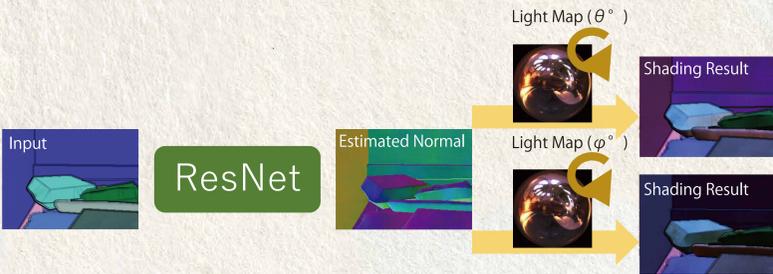
Fast and memory-efficient clustering

[ACM Multimedia 2017]



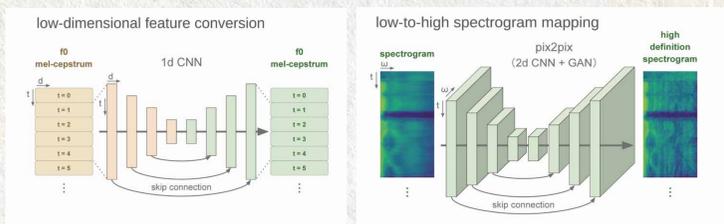
We propose an efficient clustering method for billion-scale feature vectors, called PQk-means. By first compressing input vectors into short product-quantized (PQ) codes, PQk-means achieves fast and memory-efficient clustering, even for high-dimensional vectors. Similar to k-means, PQk-means repeats the assignment and update steps, both of which can be performed in the PQ-code domain. Experimental results show that even short-length (32 bit) PQ-codes can produce competitive results compared with k-means. This result is of practical importance for clustering in memory-restricted environments. Using the proposed PQk-means scheme, the clustering of one billion 128D SIFT features with $K = 10^5$ is achieved within 14 hours, using just 32 GB of memory consumption on a single computer.

Shading of line drawings



Estimate normal maps to shade region segmented line drawings using convolutional neural networks. The networks are trained by parallel data: line drawings and geometric normals that are generated from depth maps. The shading is applied using spherical harmonics lighting.

Two stage voice conversion [IIH-MSP 2018]



We propose a voice conversion technique with two-stage conversion, low-dimensional feature conversion and low-to-high spectrogram mapping. Low-to-high spectrogram mapping is trained using only target speaker data. Therefore, our method requires few parallel data of source speaker and target one to train low-dimensional feature conversion. Each model is based on convolutional neural networks. Adversarial training is used to train low-to-high spectrogram mapping model.

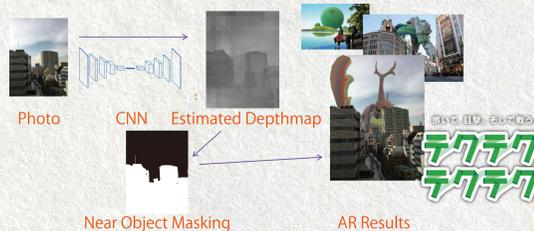
Project

nico-opendata



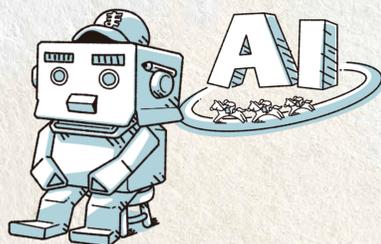
We are providing kinds of data for research communities. One of our data is digital images dataset from images posted on Nico Nico Seiga, an online illustration community. We also share a pre-trained neural network model for image tag prediction.

Mobile Application "TekuTekuTekuTeku"



We are developing the AR feature for the mobile game, "TekuTekuTekuTeku," RPG using real-world location. Using CNN, the background region is estimated from a single picture, then game monsters are synthesized into the picture. This game, released in this November, can be played on iOS and Android.

Horse racing prediction



Estimate the win rate of each horse from its race history, then decide to bet with regard to odds. Currently, our algorithm won more money than bet!

GO AI "DeepZenGo"



Using our GPU farm, we have trained Deep Learning based Computer Go AI, DeepZenGo. This year, it defeated the world's best human GO player. Winner of World AI Go Open tournament.

OpenToonz



We are providing plugins for 2D animation production as a result of CG and ML researches. OpenToonz is open-source software to develop and create 2D animations all together.

