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License Opportunities



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Additional Information and Links

Colombe, J., 2007, "Image Regularization for Biometric Face ID," www.mitre.org/news/events/tech07/3029.pdf.

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Video Super-Resolution for Biometric Face Identification

MITRE's video super-resolution for biometric face identification (ID) technology can be used to improve the performance of existing face recognition methods in identifying faces from video sources. Current biometric face ID methods are designed to operate best under controlled viewing conditions, at close range and with adequate imaging resolution. Current face ID methods tend to perform inadequately when footage is gathered under uncontrolled circumstances, as when footage is shot from a great distance. Under extreme circumstances of low resolution, face ID methods may not even be able to locate a face or the facial landmarks used to perform face comparisons across images.

To improve the effective resolution of an image within a video stream, MITRE's video super-resolution technology adds information present in multiple frames that surround the image. Pixels from surrounding images are aligned to the target frame at sub-pixel resolution, adding detail to textures, edges, facial features, and other image content. MITRE's video super-resolution method can be more effective than the form of interpolation that is often used to up-sample single images to higher resolutions, particularly if the motion and spatial frequency content of the imagery are well suited to the analysis.

Applications

MITRE's video super-resolution technology can be used by biometric system developers and integrators to provide better identification and verification of faces in video that is of too low resolution to otherwise be useful for analysis. It could also be licensed as a service to improve the state of existing video.

The technology could be used to enhance the biometric face ID systems used by security screeners, law enforcement, and other government agencies at airport security checkpoints and border crossings. By better resolving faces and other objects in a scene, the technology effectively improves the overall quality of images and could more clearly identify people placed on a watch list. Security screeners at large-scale events could also use the technology. Other future commercial applications could include face-based retailing at stores, restaurants, movie theaters, or to expedite check-in process at car rental companies and hotels.

Benefits

MITRE's video super-resolution technology can be used to improve the clarity of images present in a video stream. This may boost the performance of third-party biometric face ID methods, which by themselves perform poorly on low-resolution imagery.