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## Image Ultracompression Using Novel Algorithms

Telemedicine applications that require the transmission of medical images often suffer from the problem of large files traversing narrow bandwidth pipes. There are several file compression algorithms currently available, but future telemedicine initiatives will require even further compression.

This project will determine whether candidate ultracompression technologies maintain sufficient image quality. Blinded images can be presented to clinicians for determination as to whether diagnostic concordance has been achieved.

Walter Reed Army Medical Center has begun evaluating novel image compression technologies developed by Galaxy Scientific. In our hands, this technology is capable of compressing an 11 MB tif image of a bone x-ray down to 11KB, a 1000:1 ratio. These ultracompressed images, while certainly lossy, are nonetheless quite impressive. A large range of ratios is available, starting with a lossless 7:1. All of these compressed images are in a proprietary format, with a \*.CAF file type that apparently is only viewable by Galaxy's proprietary viewer client. We have, however, developed a technique to convert a highly compressed 34 KB CAF file to a 32 KB JPEG file with little further visible deterioration.

Conclusion: Image ultracompression has the potential to allow the use of high-resolution images in low-bandwidth telemedicine.

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**Funded by**

USAMRMC/Telemedicine and  
Advanced Technology  
Research Center