

IN THE CIRCUIT COURT OF THE SIXTH JUDICIAL CIRCUIT
OF THE STATE OF FLORIDA IN AND FOR PASCO COUNTY
CRIMINAL DIVISION

STATE OF FLORIDA,

UCN: 512014CF000216CFAXES

v.

DIVISION: 1

CURTIS REEVES,
SPN: 683538, Defendant. _____ /

**ORDER DENYING DEFENDANT'S "MOTION TO EXCLUDE PROOF AND
TESTIMONY PERTAINING TO THE STATE'S FORENSIC VIDEO EXPERT
ANTHONY IMEL"**

Filed For Record
Pasco County, Florida
2022 JAN 28 PM 3:46
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Clerk & Computer
Pasco County, Florida

THIS CAUSE came before the Court on Defendant's "Motion to Exclude Proof and Testimony Pertaining to the State's Forensic Video Expert Anthony Imel," filed on February 17, 2017 and the State's response and subsequent supplements, filed on September 18, 2020 and November 23, 2021 respectively. A hearing was held on the motion on December 16, 2021 and December 17, 2021. Having reviewed the motion and response, the testimony, the record, argument of the parties, exhibits and applicable law, the Court finds as follows:

Procedural History

On January 31, 2014, the State filed its initial information charging Defendant with murder in the second degree (PBL) and aggravated battery. The State filed two subsequent amended informations, with the most recent on May 25, 2021 charging Defendant with murder in the second degree, life felony (count one), and aggravated battery, a second degree felony (count two). On February 17, 2017, Defendant, through counsel, filed the instant motion. On September 18, 2020, the State filed its "Response to Defendant's Motion to Exclude Proof and Testimony Pertaining to the State's Forensic Video Expert Anthony Imel." On November 23, 2020, the State filed two supplements to its response, attaching its exhibits 2 through 7. A hearing was held before this Court on Defendant's motion on December 16, 2021 and December 17, 2021.

Issue and Summary of the Argument

The Defense seeks to exclude the testimony of State expert witness, Anthony Imel, at Defendant's upcoming jury trial. Although the first portion of the Defense's motion argues that Mr. Imel's testimony about brightness measurements of pixels within the media from the cameras at Cobb theater are irrelevant and their admission would create undue prejudice and mislead the

jury, the State will not be offering testimony as to this issue at trial, and therefore, that portion of the motion is moot. The Defense also asserts that Mr. Imel's method of resizing the original videos and images does not meet the inquiry under *Daubert*¹ to be admitted into evidence. The Defense argues that the bicubic smoother method used by Mr. Imel to resize the video and images from the camera adds pixels that did not exist in the original media. The Defense asserts that in increasing a portion of the media as much as Mr. Imel did, there are far more new pixels than original, therefore rendering the video inadmissible as no longer reliable. The Defense further asserts that because Mr. Imel is not familiar with the algorithms underlying the programs he used to enhance and resize the images, the reliability of the methods he used is unknown and his testimony should be excluded.

The State argues that the method used by Mr. Imel to enhance the video and images from the theater is reliable under *Daubert*, and therefore Mr. Imel's testimony about the processes he used to enhance and resize the media should not be excluded. The State argues that the bicubic smoother method used by Mr. Imel does not add content to that which is depicted in the video, but merely resizes the video so the jury can better view what it depicts. The State further argues that Adobe's Photoshop and Premier products are a reliable way to resize the video and images. The State also contends that it is not necessary for Mr. Imel to know the underlying algorithms of the software he uses for his methods to be deemed reliable. The State asserts that the video was enhanced and resized to assist the jury in determining a material fact at issue, specifically what occurred in the theater between the victim and the Defendant. The State argues that the original video and images must be submitted into evidence and Mr. Imel can explain to the jury the methods used in enhancing and resizing the media, therefore allowing the jury to compare and give the proper weight to the enhanced media in forming their ultimate conclusion of what is occurring in the video.

The State's Expert Opinion

The State seeks to put forth its expert, Anthony Imel, to present enhanced and resized video and images taken by the cameras at the Cobb Theater during the incident. Mr. Imel is a photographic technologist and forensic examiner currently employed with the Federal Bureau of Investigation (FBI).² Mr. Imel explains that the purpose of enhancement and resizing is to allow

¹ *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993).

² Mr. Imel's *curriculum vitae* was submitted as State's Exhibit I.

for ease of viewing by the jury and to bring out details that were captured by the camera, but not able to be seen in the original. Mr. Imel further explained that video forensics purposely change the media and derive information from it to better view the detail in that media. Mr. Imel opines that the enhanced and resized media that resulted from his processing is a fair and accurate representation of the original media in this case. Mr. Imel opines that in determining reliability in enhancing and resizing, an examiner must look at repeatability- the ability to repeat the steps and achieve the same results. Additionally, Mr. Imel explains that by repeatedly comparing the original video with the enhanced video, an examiner can ensure the processes and methods they used are a fair and accurate representation of the original media.

One of the central issues relating the to the media's resizing is interpolation, the process of adding or decreasing the amount of pixels in increasing or decreasing the size of an image. Mr. Imel explained that all electronic devices, including computers, printers, and televisions, use interpolation to increase or decrease the amount of pixels, and that different proprietary algorithms are used to maintain the accuracy and representation of the imagery. Mr. Imel testified he does not have knowledge of the algorithm itself, nor do other examiners, as they are proprietary to the company that produced them.

In processing media in forensic photography and video, enhancements, such as changing brightness, contrast, and sharpness, are made prior to resizing the media. Mr. Imel stated that these change the value of the original pixels and the media is physically different from the original, yet the original imagery is maintained. Because the enhancement filters change the math of the pixels, the pixels are now different from the original image, even before interpolation is completed. In the instant case, Mr. Imel testified that he performed the enhancements without altering the content using Adobe Premier for video and Adobe Photoshop for images.

After performing enhancements to the media, Mr. Imel used the bicubic smoother method of interpolation to resize the media. Bicubic smoother is a method that uses a weighted reference of 16 pixels around the original and uses an algorithm to make new pixels to create a new, resized image, while maintaining the original imagery. Mr. Imel opined that this method is "more visually depicting of the original imagery than if you used the other technologies." Specifically, Mr. Imel compares this method to the nearest neighbor method of resizing used by the Defense. Mr. Imel explained that the nearest neighbor method reproduces identical pixels by stacking them and works best in images with finite lines and high contrast, specifically graphics. However, in the Cobb

theater video here, Mr. Imel testified that nearest neighbor would produce an image that is block-like in appearance and distort the objects in the video. Mr. Imel pointed this out in State's Exhibit 4, where he used the nearest neighbor method of interpolation to resize an image from the theater, explaining the blocking and distortion of the tables on the video are a byproduct of this type of interpolation method when used on a lifelike image, as opposed to a graphic image. Mr. Imel compared this to State's Exhibit 5, which was subjected to the bicubic smoother method of interpolation and testified that while the actions, objects, and people depicted in the video remain, this method creates a more realistic appearance to the resized image.

Defendant's Objection to the Admissibility of the Testimony

The Defense objects to Mr. Imel's use of the bicubic smoother method of enhancing video footage and images. The Defense explains that the camera system used at the Cobb Theater was an "infrared motion-detecting camera" used to record objects in low light environments based on the light emitted or reflected. The Defense argues that Mr. Imel's use of the bicubic smoother method to enhance the low resolution video creates new pixels that were not in the original images, creating a distorted final product that is not the same because it has far more new pixels created by the program than original pixels captured by the camera. The Defense argues that these enhanced videos and images are therefore, inadmissible, because they do not fairly and accurately depict what occurred because the images are no longer the same.

The Defense presented the testimony of Bruce Koenig, a private forensic audio, video, and photography examiner, who was previously employed by the FBI in the audio/video forensic division.³ Mr. Koenig also testified about interpolation and its effects on images. Mr. Koenig stated that when an image is enlarged, pixels must be added. Mr. Koenig testified that when the nearest neighbor method of interpolation is used, it duplicates the pixels that already exist in the image to enlarge the photo as opposed to the other algorithms, including bicubic smoother, which make a guess in what the new pixels in an enlargement should look like. In using an algorithm other than nearest neighbor, an image is enlarged too much it degrades the image, lowers the contrast, and takes away fine details. In reading through Defense exhibits, Mr. Koenig explained that interpolating above a factor of two creates more "estimated pixels than true ones" resulting in the

³ Mr. Koenig's *curriculum vitae* was introduced into evidence as Defense Exhibit 1.

“image becoming falsified.” Mr. Koenig further testified that bicubic smoother interpolation should not be used forensically.

The Defense further argues that Mr. Imel does not have knowledge about the algorithm used by the program to create these pixels. The Defense argues, as a result, that the “scope and extent of the bicubic interpolation smoother modifications cannot be reliably ascertained.” Consequently, the Defense argues that the use of the bicubic interpolation smoother does not pass the *Daubert* inquiry. The Defense contends that Mr. Imel cannot establish the reliability of the bicubic interpolation smoother because he is not familiar enough with the algorithm used by the program, and therefore cannot testify as to exactly how it is changing the image. The Defense further argues that this method of enhancement has not been critiqued in peer reviewed journals. Additionally, the Defense argues that the videos and images enhanced through the bicubic interpolation smoother will not aid the jury, and will instead mislead the jury because the enhanced videos and images are not a fair and accurate representation of what occurred in the theater.

Legal Considerations

The four factors the Court must consider in determining whether the methods and principles applied are reliable are: 1) whether the evidence can be and has been tested; 2) whether the theory or technique has been subjected to peer review and publication; 3) the known or potential rate of error and the existence and maintenance of standards controlling the technique’s operation; and 4) whether the technique has been generally accepted in the relevant scientific community. *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). Section 90.702, Florida statutes codifies the *Daubert* standard as follows:

If scientific, technical, or other specialized knowledge will assist the trier of fact in understanding the evidence or in determining a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education may testify about it in the form of an opinion or otherwise, if:

- (1) The testimony is based upon sufficient facts or data;
- (2) The testimony is the product of reliable principles and methods; and
- (3) The witness has applied the principles and methods reliably to the facts of the case.

§ 90.702, Fla. Stat.

The list of factors set forth in *Daubert*, however, neither “necessarily or exclusively appl[y] to all experts or in every case. *Kuhmo Tire Co. v. Carmichael*, 526 U.S. 137, 141 (1999). The reliability analysis in *Daubert* is flexible and the factors are not exhaustive. *Walker v. State*, 308 So. 3d 193 (Fla. 4th DCA 2020).

“[A]n expert’s opinion must be based upon ‘knowledge,’ not merely ‘subjective belief or unsupported speculation.’” *Kemp v. State*, 280 So. 3d 81, 89 (Fla. 4th DCA 2019), *review denied*, SC19-1931, 2020 WL 1066018 (Fla. Mar. 5, 2020) (citing *Daubert*, 509 U.S. at 590). “The party who proffers the expert testimony has the burden of establishing its admissibility ‘by a preponderance of proof.’” *Blanchard v. Eli Lilly & Co.*, 207 F. Supp. 2d 308, 314 (D. Vt. 2002) (citing *Daubert*, 509 U.S. at 592 n. 10).

Findings and Conclusions

Anthony Imel is employed with the FBI as a technologist and forensic examiner for the past 10 years. Prior to that, Mr. Imel was in the Air Force Office of Special Investigations, where he established a video forensic program. Mr. Imel also testified that he has taken multiple training courses and has also trained others on doing enhancements. Mr. Imel further testified that he has testified approximately 50 times in state and federal court. Mr. Imel’s *curriculum vitae*, detailing his experience and training, was admitted into evidence by the State. Based on Mr. Imel’s testimony and his *curriculum vitae*, the Court finds that his experience and training makes him well-qualified to render expert testimony as to the methods of enhancing and resizing digital media.

The products used by Mr. Imel are widely used in Mr. Imel’s field. Based on the testimony of both Mr. Imel and the Defense expert, Mr. Koenig, Adobe Premier and Adobe Photoshop are commonly used in and reliable for forensic photography and video examination. In processing the media in this case, Mr. Imel used Adobe products to enhance and resize images. Adobe Premier does not allow the examiner to choose the method of interpolation it uses to resize images, however, Mr. Imel did note that Adobe engineers have stated that Premier uses a bicubic method to increase size. Although Mr. Koenig expressed that he does not consider bicubic smoother method appropriate for forensic analysis, Mr. Koenig did opine that Adobe Premier is sufficiently reliable for forensic work and that his own company utilizes that software. Exclusion of testimony under *Daubert* “is the exception rather than the rule.” *Vitiello v. State*, 281 So. 3d 554, 560 (Fla. 5th DCA 2019)(internal citations omitted). Although the trial court serves as the role of gatekeeper under *Daubert*, this is not to intended to replace the adversary system and “[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence.” *Id.* (quoting *United States v. 14.38 Acres of Land*, 80 F. 3d 1074, 1078

(5th Cir. 1996)). To the extent that the Defense argues there is a better approach to resizing the media, the Defense may attack this testimony through cross examination and the presentation of their own expert and enhanced media.

Additionally, Mr. Imel's methods are able to be tested through repeatability. Mr. Imel noted the brightness, sharpness, and contrast enhancements he made, as well as the method of interpolation he used to resize the media, allowing for the other examiners, including the Defense expert, to repeat the steps and ensure the same result. Moreover, Mr. Imel, based on his knowledge and experience in using these applications, is able to explain to the jury the process he went through in enhancing the media and the effects of the methods used on the media. The jury, with the explanation of how the image was changed, can compare it to the original and give the enhanced and resized media the proper weight. The jury can also compare the State's enhanced and resized media to that done by the Defense, and again give each its proper weight.

Although the Defense argues that Mr. Imel is required to have knowledge of the underlying algorithms used by the bicubic smoother interpolation method of resizing images, this is not necessary, nor is it feasible. "An expert is not required 'to have an in-depth knowledge of all the algorithms underlying their technological tools- such as hardware and software-to reliably testify about the outputs of these tools.'" *Walker v. State*, 308 So. 3d 193, 198 (Fla. 4th DCA 2020)(quoting *United States v. Morgan*, 292 F. Supp. 3d 475, 485 (D.D.C. 2018)). A forensic examiner must have "specialized knowledge in the use of the particular software or device, it is not required – nor is it practical – for an investigator to have expertise in or knowledge about the underlying programming, mathematical formulas, or other innerworkings of the software." *Id.* (internal citation omitted). Additionally, "every computer-driven item has a program and an underlying algorithm guiding the actions of that technology. It would be unrealistic and unworkable to expect every expert, who uses technology with a computer component, to be able to testify as to the workings of the algorithm that is part of its software or every technical detail that is part of the underlying system." *Id.*

Finally, the testimony presented by Mr. Imel will assist the jury in determining a material issue in the case, specifically what occurred during the incident. The purpose of Mr. Imel's testimony is to lay the foundation for presenting to the jury the enhanced video and images derived from the original recording of the incident so that the jury may more easily discern what is depicted in the media and see what may not have been apparent in the original. By explaining to the jury

the methods and processes used to add filters and resize the media, the jury can understand the changes that have been made to the media in making their comparison to the original video and use all of the media to come to a conclusion as to what occurred between the victim and the defendant.

Accordingly it is,

ORDERED AND ADJUDGED that Defendant's Motion is hereby **DENIED**.

DONE AND ORDERED in Chambers in Dade City, Pasco County, Florida, this 28th day of January, 2022. A true and correct copy of this order has been furnished to the parties listed below. A true and correct copy of this order has been furnished to the parties listed below.


Kemba Lewis, Circuit Judge

cc:

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