NATIONAL FORENSIC SCIENCES UNIVERSITY
Sector-9, Gandhinagar-382007
Phone - 079-23977123/24 & Fax-079-232 47465

IMPORTANT INSTRUCTIONS / TERMS / CONDITIONS TO TENDERERS
FORMING PART & PARCEL OF ENQUIRY DOCUMENT:

TENDER ENQUIRY No: NFSU/PUR/ET-01(73)/UPSIFS/2024-25

ITEM : **73** : SHOWN AS UNDER

TENDER FEE : **Rs. 1500/- (Rs. One Thousand Five Hundred Only)**

SERIAL # OF P.T.F. :

NAME & ADDRESS OF TENDERER : _____

: _____

: _____

C.S.P.O., REGISTRATION GROUP NO. :

THIS TENDER DOCUMENT COMPRISES OF TWO PARTS LABELLED AS PART I & II

THIS TENDER ENQUIRY IS FOR **FIXED QTY. PURCHASE** OF ITEM AS UNDER:

DETAIL SPECIFICATIONS ARE GIVEN IN PART-I i.e. TECHNICAL BID.

Sr. No.	ITEM CODE	ITEM NAME	QTY.	PLACE OF DELIVERY & INSTALLATION	E.M.D. (Rs.)
10	73	**Video and Image Enhancement and Authentication Tool**	01	UPSIFS, Lucknow	**1,26,000/-**

NOTE:

(1) **IF MANUFACTURER IS NOT AVAILABLE FOR IMPORTED COMPONENT (EQUIPMENT – MATERIALS) THEN THE REPUTED MANUFACTURERS / AUTHORIZED REPRESENTATIVE / DEALER APPOINTED EITHER BY PARENT COMPANY OR ITS SUBSIDIARY COMPANY SHALL BE ALLOWED TO QUOTE THE TENDER.**

(2) **THE TENDERER HAS TO SUBMIT ALL THE REQUIRED DETAILS / DOCUMENTS WITH THE TENDER. NO COMPILANCE WILL BE ACCEPTED AND CONSIDERED AFTER DUE DATE I.E OPENING OF THE TECHNICAL BID.**

(3) **ANNUAL MAINTENANCE CONTRACT (A.M.C.) & COMPREHENSIVE MAINTENANCE CONTRACT (C.M.C.) CHARGES FOR NEXT FIVE YEARS AFTER WARRANTY SHOULD BE QUOTED SEPARATELY. AMC/CMC CHARGES WILL NOT BE TAKEN INTO ACCOUNT FOR PRICE COMPARISION FOR DETERMINING THE LOWEST BIDDER.**

SIGNATURE & STAMP OF TENDERER

PART-I

TECHNICAL BID

T.E.NO: NFSU/PUR/ET-01(73)/UPSIFS/2024-25

Name of Item: Video and Image Enhancement and Authentication Tool

Manufacture_____ Brand_____ Model_____

[A]	REQUIRED SPECIFICATIONS	SPECIFICATIONS AVAILABLE IN OFFERED MODEL
	A. Video and Image Authentication Tool:	
	Should have at least 30 analysis filters with user customizable configuration and optional post processing parameters (levels, scale to enhance the displayed image).	
	Should be compatible with all the most common image formats and many of the uncommon ones too: BMP, GIF, JPEG, JPEG 2000, Tiff, PNG, TGA, Ico, Dicom, EMF, EPS, Photo PCD, XPM, PSD, HEIF and Raw camera formats from most manufacturers.	
	Should automatically apply all filters to one image or all images in a folder and includes support for nested folders.	
	Should generate an automatic output image and report with all processing results on one or more images and the user is able customize the output image size.	
	Should be able to create and save projects.	
	Should be able to generate a project report in HTML, PDF (optionally protected) or DOC format.	
	Should perform a quick automatic analysis of the format of all images in a folder to find suspicious files (triage).	
	Should export a multiple file analysis results table directly to Microsoft Excel for further processing.	
	Should display image location in Google Maps.	
	Should be able to check sun position for image location and date on Suncalc.	
	Should search for images from a specific camera model on Flickr and supports advanced image features filtering.	
	Should extract JPEG images embedded in any file type (images files, PDF, PPT, DOC, disk image...) for questioned document authentication support.	
	Should be able to perform customization of all the criteria for evaluating the camera original files.	
	Should be able to make the filter's label appear in red, if the analysis of an image detects signs of manipulation.	
	Should be able to display / comparison of main JPEG markers.	
	Should have integrated hexadecimal viewer with search and comparison capabilities.	
	Should display / comparison of JPEG Huffman Tables of the main image, embedded thumbnail, and preview.	
	Should perform analysis of the color space usage of the image in the HSV and Lab coordinates to help spot excessive color adjustment.	
	Should identify manipulated areas of the image based on DCT-domain analysis of aligned double JPEG quantization artifacts (ADJPEG).	
	Should identify manipulated areas of the image based on DCT-domain analysis of non-aligned double JPEG quantization artifacts (NADJPEG).	
	Should identify manipulated areas of the image based on the joint	

	analysis of JPEG Ghosts Map, Blocking Artifacts, ADJPEG and NADJPEG.	
	Should perform automatic identification of tampered areas of the image by comparison with the PRNU reference pattern of the image.	
	Should run the PRNU analysis with images and video frames (within the technical limitations) and should compare two different camera reference patterns. Should be able to extract video frames for generating the camera reference pattern file, without using external tools.	
	Should include a PRNU video tampering tool.	
	Should identify similar areas of the image that can be the result of cloning.	
	Should identify groups of similar points in the image that can be the result of cloning.	
	Should check the consistency of cast and attached shadows in an image.	
	Video and Image Enhancement Tool:	
	Should have at least 110 different filters to enhance and process images and video files.	
	Should be a single stand-alone system protected by a USB dongle or by a digital license.	
	Should be able to decode video files with these codec frameworks: FFmpeg, FFMS, DirectShow, Video for Windows, QuickTime (if installed on the system).	
	Should be able to bookmark frames and filters and customize their names, description and folder.	
	Should be able to convert and export videos in proprietary formats, most of them without transcoding. Should support one or more variations of (at least) these formats: Milestone .xml/.pqz, USBPlay archive, 2, 264, 400, 600, 787, acsm, aira, ajp, aov, arv, ary, asf, asx, av, avc, avd, ave, avf, avi, avr, awlive, bdb, bes, bfs, bin, bix, blk, body, box, bpv, bu, bvr, bwm, cme, cx3, d, da, db, dar, dat, data, dav, dbx, dcr, dga, djp, dmi, dmskm, dpv, drv, dv4, dv5, dvr, dvs, dvt, dxa, e, edr, eds, evf, exe, exp, eye, fl4, flm, gbf, gop, h263, h264, h64, har, hevc, hgd, hikvision, hme, icf, ifs, ifv, igd, image, imf, img, irf, iva, jv, k26, m2t, m2ts, m2v, m4v, m65, max, mgv, mjp, mjpg, mkv, mod, mov, mp4, mpc, mpg, mpg2, mrd, mts, mxg, n3r, noext, nvf, nvr, omv, par, pic, pns, ps, psf, pvf, qbx, raw, re4, rec, rgm, rmv, rsv, s, sdc, sdr, sec, shv, snx, ssf, strg, stw, svs, teb, tmp, umv, v, v264, vcr, vdd, vdx, vfs4, vid, video, video.data, vls, vmf, vse, vsr, webm, wmv, xpa.	
	Should be able to load more than one videos all at once.	
	Should be able to concatenate, extract the timestamp and demultiplex some proprietary video files during conversion.	
	Should support any standard video format (avi, mp4, mkv, flv, 3gpp, wmv, mov), also without the need of the codec installed on the system. Expandable by system codecs.	
	Should be able to track areas or target of interest (such as people or objects) through static, dynamic, and manual tracking.	
	Should be able to display frame type (I, P, B) for video files.	
	Should include a standard installer in both 32 bit and 64 bit version of the program and the user can switch freely between the two.	
	Should allow for all operations performed by the user to be logged on a text file, together with system info and other critical information. The feature can be optionally disabled.	
	Should be integrated with Milestone XProtect server, both connecting to the server and playing the exported images without prior conversion.	
	Should be able to export the current video frames to a PDF with the number of images per page configurable by the user.	

	Should be able to export the original video/image as well as the processed one. If the chosen output codec for exporting a video is H264, different quality options are available.	
	Should support any standard digital image format (i.e. jpeg, tiff, png, bmp, targa) as well as the HEIF format.	
	Should be able to select only the Intra Frames of a video.	
	Should have the project format in a simple and readable text which instructs the system on the filters and parameters to apply on specific files.	
	Should provide the automatic generation of a report and should contain all the scientific methodology and details of the processing steps, settings, and the bibliographic references to the algorithms in HTML, PDF (optionally protected) or DOC format.	
	Should provide different report templates and should allow the creation of customized templates too.	
	Should provide volume and mute controls when audio is enabled.	
	Should support multichannel audio for some formats.	
	Should be able to redact audio.	
	Should have an automatic call back of three different analysis tools (MediaInfo, ExifTool tool and FFprobe) to quickly analyze and compare the digital information of image and video files.	
	Should be able to perform video mixer overlays or display two different videos side by side. Should support synchronization of streams and similarity metrics computation.	
	Should be able to put in sequence or side by side multiple videos.	
	Should be able to apply the Picture in Picture effect to display a small image or video over a larger one	
	Should be able to convert a video with juxtaposed fields into an interlaced video.	
	Should correct the geometric distortion caused by capturing optics (barrel, pin-cushion and fisheye lens distortion). Should support the selection of multiple lines for the estimation of the curvature to compensate.	
	Should be able to convert an omnidirectional image into a panoramic one.	
	Should have a homomorphic filter to adjust separately the contrast of the illumination and detail in an image.	
	Should be able to correct an uneven illumination in the image using the Retinex algorithm.	
	Should have a color deconvolution filter to maximize the differences between specific colors in the image.	
	Should be able to perform component separation to separate signals due to different informative components in the image.	
	Should be able to calculate the input file hash code to check data integrity when loading the project. Should support several hashing algorithms.	
	Should be able to correct the blur caused by linear motion	
	Should be able to correct the blur caused by wrong focus	
	Should be able to correct the blur by non-linear motion defined by the user.	
	Should be able to correct the blur caused by air turbulence on long distances or by high ambient air temperature/humidity.	
	Should be able to align the perspective of different images of the same object, taken from different points of view. Should support any kind of motion (shift, rotation, zoom, perspective changes).	
	Should be able to perform automatic perspective stabilization of the	

	same object taken by different angles.	
	Should be able to visualize the macroblock type and motion vectors from a MPEG based video.	
	Should have a super resolution feature that Should generate a single higher-resolution image by merging all the frames with subpixel motion estimation, even with different perspectives.	
	Should be able to stabilize a video focusing on an object with either static, dynamic or manual tracking.	
	Should be able to stabilize a shaking video automatically.	
	Should be able to adapt the video frame rate by duplicating or dropping frames retaining the original speed.	
	Should be able to perform video redaction to pixelate, darken or blur an area of interest in a video (for privacy reasons, witness protection, or sensitive subjects). Should support different tracking methods (either manual or software assisted) and inverse selection.	
	Should be able to annotate images or videos with arrows, shapes, freehand drawings, magnification and spotlight effects. Each annotation Should be able to track a specific target (either manually or with software assisted tracking).	
	Should be able to display subtitles on the video frames with customizable font, color, size and position.	
	Should be able to indicate date and time for the current frame and font, color, size and position Should be customizable.	
	Should be able to superimpose a grid onto the image or video which is useful for compression estimation and other analysis.	
	Should be able to play back the video in the reverse direction.	
	Should be able to take a measurement on the image with a reconstruction model of the perspective. Should support error calculation.	
	Should be able to copy the evidence files stored in an external removable device, verifying the match between the source hash codes and the destination hash codes in order to check the integrity for a safe acquisition. Should generate an automatic report of the action performed.	
	Should be able to reduce the blocking artifacts caused by JPEG compression.	
	Should have multiple denoising, sharpening and intensity adjustment filters.	
	Should be able to invert and replace the color channels of an image with another.	
	Should be able to process and optionally record live video from a DirectShow compatible source.	
	Should be able to load multiple images together to work on them as if they were frames of a single video file.	
	Should include a special seek function which allows to move on user specified intervals based on units of (frames, Iframes, or different time units).	
	Should be able to send, with a single click, the current image to Word, PowerPoint or copy it onto the clipboard for pasting in any other tool.	
	Should have the notes panel always available on screen and the notes Should be automatically saved with the project.	
	Should have the ability to integrate screen capture with the option to save standard uncompressed video files for maximum quality and compatibility.	
	Should be able to view, grab and process any stream coming from a DirectShow compatible device.	

	Should include more than 50 different sample projects and files to learn how to apply the software in numerous situations.	
	Should be able to select frames of the video within an interval with an optional frame step. Should support the trimming of the original video stream without transcoding.	
	Should be able to select a list of frames that are defined by the user.	
	Should allow to correct the perspective of objects in an image (e.g. rectifying a license plate).	
	Should be able to reduce the noise integrating current and previous frames and avoiding halos on moving objects.	
	Should be able to put side by side the original and the processed image.	
	Should be able to add logos, text with dynamic macros and shapes on images and videos.	

[B]	**IMPORTANT TERMS AND CONDITION FOR SUPPLY**
	1. Delivery : The Director Uttar Pradesh State Institute of Forensic Science, Piparsand, Sarojini Nagar, Kanpur Road, Lucknow- 226008
	2. <u>Installation/Inspection:</u> Uttar Pradesh State Institute of Forensic Science, Lucknow
	3. <u>Payment</u>: By NFSU Gandhinagar Campus