

CLASS 345 COMPUTER GRAPHICS PROCESSING AND SELECTIVE VISUAL DISPLAY SYSTEMS 345 - 1

418	COMPUTER GRAPHICS PROCESSING	611	..Anti-aliasing or image smoothing
419	..Three-dimension	612	...Save attributes for each object affecting a given pixel
420	..Solid modelling	613	...Subpixel processing
421	..Hidden line/surface determining	614	...Pixel fragment
422	...Z buffer (depth buffer)	615	...Convolving technique
423	..Tessellation	616	...Error diffusion
424	..Voxel	617	..Contrast
426	..Lighting/shading	618	..Image with abnormal condition
427	..Space transformation	619	..Graphic manipulation (object processing or display attributes)
428	..Adjusting level of detail	620	..Clipping
581	..Attributes (surface detail or characteristic, display attributes)	621	...Based on model of objects
582	..Texture	622	....Testing or using bounding shape (e.g., bounding box sphere)
583	...Solid Texture	623	....Object clipped to view volume
584	...Bump map	624	....Object clipped to another object
585	...Non-planar surface	625	...Based on image data
586	..Mathematically defined	626	....Masking
587	...MIP map	627	....Non-rectangular array
588	...Repeating pattern	628	....Rectangular region
589	..Color or intensity	629	..Merge or overlay
590	..Gamut clipping or adjustment	630	...Combining model representations
591	..Color processing in perceptual color space	631	...Reducing redundancy
592	...Transparency (mixing color values)	632	...Placing generated data in real scene
593	...Color selection	633	....Augmented reality (real-time)
594	....Using GUI	634	...Image based
595	....Expert system or AI	635	....Non-overlapping
596	...Dither or halftone	636	....Character and graphics
597	...Color	637	....Priority based
598	....Spatial	638	....Insertion of bitmapped moving picture
599	....Spatial	639	....Weighted
600	...Color bit data modification or conversion	640	....Weights vary across image (e.g., transition from foreground to background)
601	....Using look up table	641	....Fixed overlay pattern
602	....Plural look up tables	642	..Picking
603	....Format change (e.g., NTSC to RGB, RGB to composite, XYZ to RGB)	643	..Arithmetic processing of image data
604	....Color space transformation (e.g., RGB to YUV)	644	..Matrix calculations
605	....Change in number of bits for a designated color (e.g., 4 bits to 8 bits, 8 bits to 4 bits)	645	...Hierarchy of transformations (e.g., hierarchy of global and local coordinate)
606	..Interpolation of attribute values across object surface	646	..Morphing
607	...In perspective	647	..Distortion
608	...Tri-linear	648	..Affine
609	...Bi-linear		
610	...Linear		

345 - 2

CLASS 345 COMPUTER GRAPHICS PROCESSING AND SELECTIVE VISUAL DISPLAY SYSTEMS

649	..Rotation	689	..Textual entry or display of manipulation information (e.g., enter or display degree of rotation)
650	...Graphical user interface tools		
651	....Alignment functions (e.g., snapping, gravity)	440	.Graph generating
652	....Constrained manipulations (e.g., movement in less than all dimensions)	440.1	..Real-time waveform display
653	....3D manipulations	440.2	..Bar graph
654	....2D manipulations	441	.Shape generating
655	...Object based	442	..Curve
656	...Image based (addressing)	443	..Straight line
657	....By arbitrary angle	467	.Character generating
658	....By 90 degrees increment	468	..Character geometry processing
659	....Image rotates in response to display device orientation	469	...Character generation using control points or hints
660	..Scaling	469.1	..Character border
661	...Graphical user interface tools	470	..Generating character fill data from outline data
662	....Alignment functions (e.g., snapping, gravity)	471	..Alteration of stored font
663	....Constrained manipulations (i.e., movement in less than all dimensions)	472	...Scaling
664	....3D manipulations	472.1	....Reduction only
665	....2D manipulations	472.2	....Enlargement only
666	...Object based	472.3	..Calligraphic
667	...Image based (addressing)	473	.Animation
668	....By arbitrary ratio	474	..Motion planning or control
669	....By integer multiples	475	..Temporal interpolation or processing
670	....Reduction only	156	DISPLAY PERIPHERAL INTERFACE INPUT DEVICE
671	....Enlargement only	157	.Cursor mark position control device
672	..Translation	158	..Including orientation sensors (e.g., infrared, ultrasonic, remotely controlled)
673	...Averaging technique	159	..Having variable cursor speed
674	...Copying data to create additional rows or columns	160	..Cursor key
676	...Graphical user interface tools	161	..Joystick
677	....Alignment functions (e.g., snapping, gravity)	162	..Positional storage means
678	....Constrained manipulations (i.e., movement in less than all dimensions)	163	..Mouse
679	....3D manipulations	164	...Rotatable ball detector
680	....2D manipulations	165	....Photosensor encoder
681	...Object based	166	...Optical detector
682	...Image based (addressing)	167	..Trackball
683	....Sprite	168	.Including keyboard
684	....Scrolling	169	..Portable (i.e., handheld, calculator, remote controller)
685	....Alphanumeric	170	..Light source associated with each key
686	....Memory addressing	171	..Having foreign language capability (e.g., Japanese, Chinese)
687	.....Smooth or continuous	172	..Having programmable function key
688	.....Attribute changes during scrolling	173	.Touch panel

CLASS 345 COMPUTER GRAPHICS PROCESSING AND SELECTIVE VISUAL DISPLAY SYSTEMS 345 - 3

174	..Including impedance detection	548	..Off-screen memory
175	..Including optical detection	549	..Color memory
176	..Transparent substrate having light entrapment capability (i.e., waveguides)	550	...Multiple planes
177	..Including surface acoustic detection	551	..Character memory
178	..With alignment or calibration capability (i.e., parallax problem)	552	.Texture memory
179	.Stylus	553	.Display list memory
180	.Light pen for CRT display	554	.Multi-port memory
181	..CRT having tracking capability	555	.For storing compressed data
182	.Light pen for fluid matrix display panel	556	.For storing condition code, flag or status
183	.Light pen for controlling plural light-emitting display elements (e.g., LED, lamps)	557	.Cache
184	.Mechanical control (e.g., rotatable knob, slider)	558	.First in first out (i.e., FIFO)
501	COMPUTER GRAPHIC PROCESSING SYSTEM	559	.Register
502	.Plural graphics processors	560	.Row buffer (e.g., line memory)
503	..Coprocessor (e.g., graphic accelerator)	561	.Logical operations
504	..Master-slave processors	562	..Bit block transfer
505	..Parallel processors (e.g., identical processors)	563	..Mask data operation
506	..Pipeline processors	564	.Addressing
519	.Integrated circuit (e.g., single chip semiconductor device)	565	..Using memory for storing address information
520	.Interface (e.g., controller)	566	..Address manipulation
522	.Graphic command processing	567	...Using decoding
530	COMPUTER GRAPHICS DISPLAY MEMORY SYSTEM	568	...Address translation (e.g., between virtual and physical addresses)
531	.Graphic display memory controller	569	..For 2D coordinate to linear address conversion
532	..Plural memory controllers	570	..Page mode
533	..Using different access modes	571	..Memory addresses arranged in matrix row and column addresses)
534	..Memory access timing signals	572	..Address generator
535	..Memory arbitration	573	...Plural address generators
536	.Plural storage devices	574	...Read/Write address generator
537	..Data transfer between memories	204	DISPLAY DRIVING CONTROL CIRCUITRY
538	...Data transfer between system memory display memory	205	.Physically integral with display elements
539	..Double buffered	206	..Having common base or substrate
540	..Interleaved	207	.Light detection means (e.g., with photodetector)
541	.Shared memory	690	.Intensity or color driving control (e.g., gray scale)
542	..Unified memory architecture (e.g., UMA)	691	..Temporal processing (e.g., pulse width variation over time
543	.Memory allocation	692	...Binary weighted
544	.Memory partitioning	693	...Non-binary weighted
545	.Frame buffer	694	..Spatial processing (e.g., patterns or subpixel configuration)
546	..Multi-format frame buffer	695	...Subpixels have different shapes
547	..Memory for storing video data	696	...Changing of subpixel location over time
		697	..Including optical means

345 - 4

CLASS 345 COMPUTER GRAPHICS PROCESSING AND SELECTIVE VISUAL DISPLAY SYSTEMS

698	.Adjusting display pixel size or pixels per given area (i.e., resolution)	17	...Strokes for forming characters
		18	...Up/down counter
699	..Controller automatically senses monitor resolution	19	..Impedance Array
		20	.Data responsive intensity control
208	.Waveform generator coupled to display elements	21	..Magnetic element array
		22	.Color display
209	..Field period polarity reversal	23	.Graphic and alphanumeric display
210	..Having three or more voltage levels	24	.Graphic display
		25	.Alphanumeric display
211	.Display power source	26	..Character generator
212	..Regulating means	27	.Combined with storage means
213	..Synchronizing means	28	..Addressing
214	.Controlling the condition of display elements	29	.Delay line
		30	PLURAL PHYSICAL DISPLAY ELEMENT CONTROL SYSTEM (E.G., NON-CRT)
215	..Including priming means		
1.1	PLURAL DISPLAY SYSTEMS	31	.Physically movable array
1.2	.Data transmitted or received at surface of display	32	.Optical means interposed in viewing path (e.g., filters, lens, etc.)
1.3	.Tiling or modular adjacent displays		
		33	.Segmented display elements
2.1	.Remotely located	34	..Seven segment display
2.2	..Presentation of similar images	35	..Bar graph
2.3	..Wireless connection	36	...Electroluminescent display elements
3.1	.Diverse systems (e.g., CRT or LCD interface)	37	...Gas discharge display segments (e.g., plasma)
		38	...Liquid crystal display segments
3.2	..Frame, field or scan rate conversion	39	...Light-emitting diode segments (LEDS)
3.3	..Number of pixels per row or column conversion (i.e., resolution conversion)	40	...Plural (e.g., stacked, adjacent)
3.4	...Controller automatically senses monitor resolution	41	..Fluid light-emitting display elements (e.g., gas, plasma)
4	SINGLE DISPLAY SYSTEM HAVING STACKED SUPERIMPOSED DISPLAY DEVICES (E.G., TANDEM)	42	...Controlling circuitry
5	.Diverse display devices	43	..Mask or electrode shape
6	.Three-dimensional arrays	44	..Solid light-emitting display elements
7	IMAGE SUPERPOSITION BY OPTICAL MEANS (E.G., HEADS-UP DISPLAY)	45	...Electroluminescent
8	.Operator body-mounted heads-up display (e.g., helmet mounted display)	46	...Light-emitting diodes
		47	..Fluorescent elements
9	.Plural image superposition	48	..Light-controlling display elements
10	DATA RESPONSIVE CRT DISPLAY CONTROL	49	...Electrochromic elements
		50	...Liquid crystal elements
11	.CRT provides display control	51	...Display element selection circuitry
12	.Data responsive deflection and intensity control		
		52	....Power supply generating circuitry
13	.Data responsive deflection control	53	....Specific waveform (e.g., square waveforms, sinusoidal)
14	..X and Y axis deflection control	54	....Field period polarity reversal
15	..Curvilinear deflection control (e.g., lissajous)		
16	..Stroke or vector		

CLASS 345 COMPUTER GRAPHICS PROCESSING AND SELECTIVE VISUAL DISPLAY SYSTEMS

345 - 5

55	..Display elements arranged in matrix (e.g., rows and columns)	89	....Gray scale capability (e.g., halftone)
56	..Image shifting means (i.e., traveling message)	90	....Control means at each display element
57	...Having endless belt or tape reader	91	.....Diode or varistor
58	..Crosstalk elimination	92	.....Thin film transistor (TFT)
59	..Matrix for conveying alphanumeric data	93	.....Redundancy (e.g., plural control elements or electrodes)
60	..Fluid light emitter (e.g., gas, liquid, or plasma)	94	....Waveform generation
61	...Shifting means	95	.....Three or more voltages
62	....Specified plasma coupling path	96	.....Field period polarity reversal
63	...Intensity control	97	.....Ferroelectric liquid crystal elements
64	...Liquid light emitter	98	....Specific display element control means (e.g., latches, memories, logic)
65	...Phosphor excited by fluid response	99	.....Particular timing circuit
66	...Particular discharge path	100	.....Particular row or column control (e.g., shift register)
67	..More than two electrodes per element	101	....Data signal compensation in response to temperature
68	..Means for combining selective and sustain signals	102	....Backlight control
69	....Resistor-diode arrangement	103	....Grouped electrodes (e.g., matrix partitioned into sections)
70	.....Including transformer	104	....Input/output liquid crystal display panel
71	..Electrode insulated from fluid medium	105	...Electrochromic elements
72	...Color	106	...Thermochromic elements
73	..Incandescent	107	...Particle suspensions (e.g., electrophoretic)
74.1	..Cathodoluminescent type	108	..Plural mechanically movable display elements
75.1	...Vacuum fluorescent	109	...Having shutters
75.2	...Field emissive (e.g., FED, Spindt, microtip, etc.)	110	...With motor or rotor driver means
76	..Electroluminescent	111	...With a permanent magnet placed on movable display elements
77	...Brightness or intensity control		
78	...Having compensating pulse		
79	...Field period polarity reversal		
80	...Driving means integral to substrate		
81	...Optical addressing (e.g., photodetection)		
82	..Solid body light emitter (e.g., LED)		
83	...Color		
84	..Light-controlling display elements		
85	...Electroscopic (e.g., movable electrodes or electrostatic elements)		
86	...Magneto-optic		
87	...Liquid crystal display elements (LCD)		
88	....Color		
			<u>CROSS-REFERENCE ART COLLECTIONS</u>
		901	ELECTRONIC BOOK WITH DISPLAY
		902	MENU DISPLAY
		903	MODULAR DISPLAY
		904	DISPLAY WITH FAIL/SAFE TESTING FEATURE
		905	DISPLAY DEVICE WITH HOUSING STRUCTURE
		947	FONT CHARACTER EDGE PROCESSING

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.