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| **No.** | **Paper Name** | **Plus-Points** | **Minus-Points** | **Methodology** |
| 1 | DiamondTouch | * Multi-touch * One of the first touch interfaces | * Used tabletop-front-projected displays that is much liable to occlusion * Tightly bound to size, need hardware change to resize touch area | * User sits on the chair and touches the table surface. * The table surface is a constructed with a set of embedded antennas and capacitance of chair and table is compared to determine the touch point |
| 2 | HoloWall | * Multitouch * No pointing devices needed * Large-size applications | * Camera and projector need to be behind the touch surface that makes it less compact * Everything touching the surface and even near to the touch surface will be considered as legitimate touch point. * Not compatible with any surface | * When anything comes near to the touch surface i.e., glass, it is illuminated with IR LED’s and sensed by IR camera placed behind the touch surface |
| 3 | The design of infrared touch screen based on MCU | * Multitouch * Cheap, no projector included * Large-size applications | * IR illuminators and camera needs to be placed either front or back of the touch surface making the system less compact * Surface needs to be transparent or at least translucent. Does not work on all surface types * Everything touching the surface will be considered as legitimate touch point | * A partially transparent surface is illuminated using IR illuminators. An IR camera is placed to capture the images at fixed intervals. Using image processing techniques, touch contact area is calculated. |
| 4 | SmartTouch: A Cost-effective Infrared based Imaging Touch Screen | * Multitouch * Can work on any lcd monitor * Can sense a pointing instrument e.g., pen and hand gestures as well | * IR Camera needs to be placed in front the screen and array of IR LEDs are placed around the screen that makes the system less compact. * In case of multitouch, occlusion can occur easily making the gestures less likely to be recognized such as swipe, roll and pinch etc. * Lower frame rate i.e., 10 to 30 fps that makes touch latency high | * An LCD monitor is illuminated using array of IR LEDs and IR camera is used to capture the frames. * The contact area in captured frame is calculated using image processing techniques such as Homography |
| 5 | Turn Any Display into a Touch Screen Using Infrared Optical Technique | * Multitouch * Can work on any surface * Can sense a pointing instrument e.g., pen and hand gestures as well | * Camera needs to be placed in front the screen and array of IR LEDs are placed around the screen that makes the system less compact. * In case of multitouch, occlusion can occur easily making the gestures less likely to be recognized such as swipe, roll and pinch etc.   Lower frame rate i.e., 10 to 30 fps that makes touch latency high | * An LCD monitor is illuminated using array of IR LEDs and Webcam is used to capture the frames. * The contact area in captured frame is calculated using image processing techniques such as Homography, Morphology |
| 6 | Transforming a Regular Screen into a Touch Screen Using a Single Webcam | * Just need a regular webcam * Camera is placed on the boundary of touch surface making the system compact | * Higher level of noise because camera can capture the display monitor image as well * Difficult to accurately calculate the contact area along the line of sight of the camera * In case of multitouch and glossy surface, occlusion can occur easily. * Much liable to error with varying lighting conditions * Lower frame rate i.e., 10 to 30 fps that makes touch latency high | * The system first detects the screen’s bottom and the area outside the screen is excluded from touch surface * The finger tip is extracted using color filtration matching to the skin. The biggest contour is the touch surface |