

- [0120] 35. To provide an occupant sensor which determines whether any occupants of the vehicle are conscious by analyzing movement of their eyes, eyelids or other parts and, optionally, to send this information by telematics to one or more remote sites.
- [0121] 36. To provide an occupant sensor which determines whether any occupants of the vehicle are wounded to the extent that they are bleeding by analyzing air/gas in the vehicle and, optionally, to send this information by telematics to one or more remote sites.
- [0122] 37. To provide an occupant sensor which determines the presence and health state of any occupants in the vehicle by analyzing sounds emanating from the passenger compartment and, optionally, to send this information by telematics to one or more remote sites. Such sounds can be directed to a remote, manned site for consideration in dispatching response personnel.
- [0123] 38. To provide an occupant sensor which determines whether any occupants of the vehicle are moving using radar systems, such as micropower impulse radar (MIR), which can also detect the heartbeats of any occupants and, optionally, to send this information by telematics to one or more remote sites.
- [0124] 39. To provide a vehicle monitoring system which provides a communications channel between the vehicle (possibly through microphones or speaker transducers distributed throughout the vehicle) and a manned assistance facility to enable communications with the occupants after a crash or whenever the occupants are in need of assistance (e.g., if the occupants are lost, then data forming maps as a navigational aid can be transmitted to the vehicle).
- [0125] 40. To provide a vehicle monitoring system using modulated radiation to aid in the determining of the distance from a transducer (either ultrasonic or electromagnetic) to an occupying item of a vehicle.
- [0126] 41. To provide a glare filter for a glare reduction system that uses semiconducting or metallic (organic) polymers to provide a low cost system, which may reside in the windshield, visor, mirror or special device.
- [0127] 42. To provide a very low cost monitoring and presence detection system that uses the property that water in the near field of an antenna changes the antenna's loading or impedance matching or resonant properties.
- [0128] 43. To provide a glare filter based on electronic Venetian blinds, polarizers or spatial light monitors.
- [0129] 44. To provide an interior monitoring system which provides three-dimensional information about an occupying item from a single transducer mounting location.
- [0130] 45. To provide an interior monitoring system that utilizes either/or the reflection, scattering, absorption or transmission of waves including capacitive or other field based sensors.
- [0131] 46. To provide a windshield where a substantial part of the area is covered by a plastic electronics film for a display and/or glare control.
- [0132] 47. To provide a method of measuring the distance from a sensor to an occupant or part thereof using calculations based of the degree of focus of an image.
- [0133] 48. To provide for a driver monitoring system using an imaging transducer mounted on the rear view mirror.
- [0134] 49. Using structured light to determine the distance to an occupant from a transducer.
- [0135] 50. To provide a single camera system that passes the requirements of FMVSS-208.
- [0136] 51. To control a vehicle component using eye tracking techniques.
- [0137] 52. To use a visor as a display and/or glare stopper.

BRIEF DESCRIPTION OF THE DRAWINGS

[0138] The following drawings are illustrative of embodiments of the system developed or adapted using the teachings of this invention and are not meant to limit the scope of the invention as encompassed by the claims.

[0139] FIG. 1 is a side view with parts cutaway and removed of a vehicle showing the passenger compartment containing a rear facing child seat on the front passenger seat and a preferred mounting location for an occupant and rear facing child seat presence detector including an antenna field sensor and a resonator or reflector placed onto the forward most portion of the child seat.

[0140] FIG. 1A is a side view with parts cutaway and removed of a vehicle showing the passenger compartment containing a rear facing child seat on the front passenger seat having a resonator or reflector placed onto the forward most portion of the child seat.

[0141] FIG. 2 is a side view with parts cutaway and removed showing schematically the interface between the vehicle interior monitoring system of this invention and the vehicle cellular or other telematics communication system including an antenna field sensor.

[0142] FIG. 2A is a diagram of one exemplifying embodiment of the invention.

[0143] FIG. 3 is a side view with parts cutaway and removed showing schematically the interface between the vehicle interior monitoring system of this invention and the vehicle heating and air conditioning system and including an antenna field sensor.

[0144] FIG. 4 is a side view with parts cutaway and removed showing schematically the interface between the vehicle interior monitoring system of this invention and the vehicle airbag system and including an antenna field sensor.

[0145] FIG. 5 is a side view with parts cutaway and removed showing schematically the interface between the