CLAIMS

Claim 1:

A cockpit system for use in a vehicle, the cockpit system comprising:

a camera for providing a driving image;

a flexible touch screen, having a flexible mechanism configured to control a flexible state of the flexible touch screen;

a steering wheel, having a foldable mechanism configured to control a folding state of the steering wheel, the flexible touch screen being arranged on the steering wheel; and

a controller, coupled to the camera, the flexible touch screen, and the steering wheel, for determining an operational requirement of a driver according to the driving image, and controlling the flexible mechanism and the foldable mechanism according to the operational requirement,

wherein when the operational requirement is manual driving, the steering wheel is fully unfolded and oriented toward the driver, and the flexible touch screen is bent to expose a portion of the flexible touch screen to the driver, wherein the portion of the flexible touch screen is configured to display control functions to the driver.

Claim 2:

The cockpit system according to claim 1, further comprising a microphone for providing a voice of the driver,

wherein the controller is further coupled to the microphone configured to determine the operational requirement based on the driving image and the voice of the driver.

Claim 3:

The cockpit system according to claim 2, wherein the controller is configured to determine whether at least one voice command exists in the voice of the driver by applying a voice recognition algorithm to determine the operational requirement based on the at least one voice command.

Claim 4:

The cockpit system according to claim 1, further comprising a driver seat sensor for providing a seat inclination angle signal,

wherein the controller is further coupled to the driver seat sensor configured to determine the operational requirement based on the driving image and the seat inclination angle signal.

Claim 5:

The cockpit system according to claim 1, wherein the controller is configured to determine whether the driver has a preset steering wheel setting based on the driving image by applying a face recognition algorithm to determine the operational requirement of the driver.

Claim 6:

The cockpit system according to claim 1, wherein the controller is configured to determine whether the driver has entered a sleep state based on the driving image by applying a passenger monitoring system algorithm to determine the operational requirement of the driver.

Claim 7:

The cockpit system according to claim 1, wherein the controller is configured to determine a passenger status of the driver based on the driving image by applying a posture recognition algorithm to determine the operational requirement of the driver.

Claim 8:

The cockpit system according to claim 1, wherein the controller is configured to determine a passenger status of the driver based on the driving image by applying a gesture recognition algorithm to determine the operational requirement of the driver.

Claim 9:

The cockpit system according to claim 1, wherein when the operational requirement is a tablet operation, the steering wheel and the flexible touch screen are fully unfolded and oriented toward the driver.

Claim 10:

The cockpit system according to claim 9, further comprising a front display and/or at least one head-up display, wherein at least one of the front display and the at least one head-up display is configured to synchronize with the flexible touch screen.

Claim 11:

The cockpit system according to claim 1, wherein when the operational requirement is a laptop operation, the steering wheel and the flexible touch screen are unfolded and oriented toward the driver.

Claim 12:

The cockpit system according to claim 1, wherein when the operational requirement is a sleep operation, the steering wheel and the flexible touch screen are fully folded and retracted into an accommodation space of the vehicle.

Claim 13:

The cockpit system according to claim 1, wherein the flexible mechanism of the steering wheel is further configured to control a turning of the steering wheel.

Claim 14:

A control system for use in a vehicle, the control system comprising:

a camera for providing an occupant image;

a flexible touch screen, having a flexible mechanism to configured to control a flexible state of the flexible touch screen;

a controller, coupled to the camera, and the flexible touch screen, for determining an operational requirement of an occupant according to the occupant image, and controlling the flexible mechanism according to the operational requirement; and

a steering wheel, coupled to the controller, having a foldable mechanism configured to control a folding state and turning of the steering wheel, the flexible touch screen being arranged on the steering wheel, where the controller is further configured to control the foldable mechanism according to the operational requirement,

wherein when the operational requirement is manual driving, the steering wheel is fully unfolded and oriented toward the occupant, and the flexible touch screen is bent to

expose a portion of the flexible touch screen to the occupant, wherein the portion of the flexible touch screen is configured to display control functions to the occupant.

Claim 15:

The control system according to claim 14, further comprising a microphone for providing a voice of the occupant,

wherein the controller is further coupled to the microphone configured to determine the operational requirement based on the occupant image and the voice of the occupant.

Claim 16:

The control system according to claim 14, further comprising an occupant seat sensor for providing a seat inclination angle signal,

wherein the controller is further coupled to the occupant seat sensor configured to determine the operational requirement based on the occupant image and the seat inclination angle signal.

Claim 17:

The control system according to claim 14, wherein the controller is configured to determine whether the occupant has entered a sleep state based on the occupant image by applying a passenger monitoring system algorithm to determine the operational requirement of the occupant.

Claim 18:

The control system according to claim 14, wherein the controller is configured to

determine a passenger status of the occupant based on the occupant image by applying a posture recognition algorithm to determine the operational requirement of the occupant.