Solving some key problem in the google glasses….

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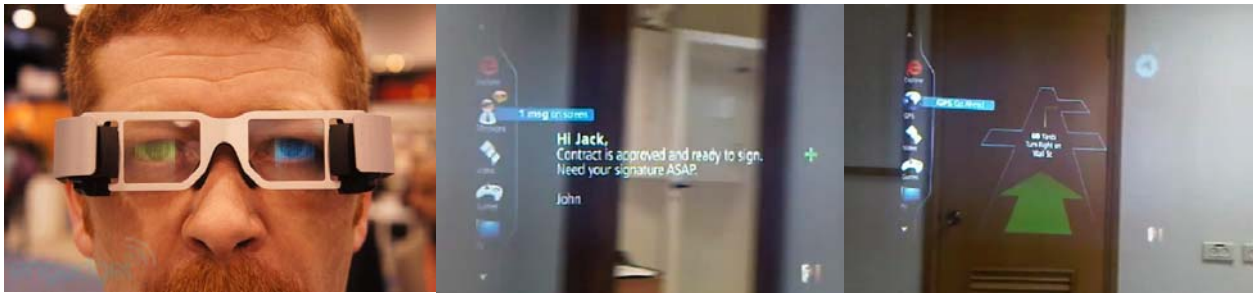
Problem thread: http://www.wired.com/gadgetlab/2012/04/augmented-reality-experts-say-google-glasses-face-serious-hurdles/?intcid=story_ribbon

1) How can the field of view be improved?

Lumix provides a betters solution for HUD giving a bigger field of view .Well it is a 720P display and is electronically translucent so you will not accidentally walk into people or poles.



Reference:
http://www.engadget.com/2012/01/11/lumus-see-through-wearable-display-hands-on/

2) Can we have dynamic focusing to focus on distant objects?

Yes. Take a look at Pixel optics electronically adjustable

Reference:
http://www.engadget.com/2012/01/11/lumus-see-through-wearable-display-hands-on/
http://www.engadget.com/2012/02/23/lumus-oe-31-optical-engine-turns-motorcycle-helmets-other-eyew/

3) How can we make the UI better to show meta data of distant objects?

Well by using a High density display one can design display icons at high resolution. Now the objects farther away appear to be smaller and the objects closer appear to be larger. One can use the same principle to design UI in the HUD where the meta data of farther objects is smaller than that of the objects closer to it. This will create an optical illusion of depth perceived in the UI. Also Lumix is capable of 3D display and this can be used further to have a 3D UI. Say the road path in google maps can be rendered in 3D and be shown narrowing away at a distance. Well since the

perceptive pixel lens can be deformed in a convex fashion it should also be possible to deform it in the concave fashion.

4) Achieving the goal in 6 months.

Well DARPA and NSF sponsored speech research that went into making Siri in Apple can be adopted in the HUD. It can have a tiny pinhole 2MP camera in the goggles just over the nose. The googles itself can be wireless with a Wi-fi or blue tooth chipset and a tiny IMU for measuring the head rotation. The radio link can be used to send data back to an android device in a user's pocket which takes in the current GPS location, parses the location specific data from google map API and then send the data back to the HUD for display. It can also use the IMU data to change the meta displayed as per the user's gaze. Finally the Android phone itself can be connected to the cloud to handled that data parsing. This design has more space for Li-Ion battery in the googles so that the users get better run time.

Or the glasses itself can have a 3G radio link with an IMU and an AMR processor which runs the basic OS for handling the user interaction and processing the location and gaze data from the IMU. The 3G signal strength itself can be used to track the user's position indoors and outdoors by triangulation with an accuracy of 5-20 cm.

5) Adjusting the display brightness to changing outdoor illumination

Well Samsung has developed a transparent window display unit which can completely block the outside radiation and work as an electronically controllable blinds. Either a layer of this LCD, or a normal LCD or SPD based film for large architectural displays can be used to block about 40% percent of additional light. One can use an infrared sensor to measure the change in outdoor illumination and appropriately control the electronically translucent layer. A rather simpler solution would be is to use sun- shades to cover the HUD panels.

http://www.engadget.com/2012/01/15/Samsung-OLED-Transparent-Smart-window-CES-update/

6) A simple implementation

Use apple Iphone 4S with Siri and connect it a video goggles that has a wi-fi/ Bluetooth link, a camera, microphone and head phones . Then attach an electronic compass with tilt compensation module to measure the user's gaze. Vuzix 3D stereo goggles can themselves be used. The use of tiny ultrasonic motors at the lens of each of the cameras will help achieve dynamic zoom.

http://itvgoggles.com/
http://www.vuzix.in/products/wrap920ar

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