**CS 4331-002 – VIRTUAL REALITY**

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STUDENT’S CHOICE TALK REPORT

# Overview:

## Intro Video: <http://www.youtube.com/watch?v=TMRNMLFlfP0>

Aero-glass is an augmented reality navigation experience using ODG R-7 smart glasses. Based in San Diego, Calif. and Budapest, Hungary, Aero Glass is an award-winning developer of AR solutions for the general aviation and automotive industries, revolutionizing the way people fly. The company was selected to be part of the [Airbus Bizlab](http://cts.businesswire.com/ct/CT?id=smartlink&url=https%3A%2F%2Fwww.airbus-bizlab.com%2Fproject%2Faero-glass%2Finfo&esheet=51579091&newsitemid=20170622006102&lan=en-US&anchor=Airbus+Bizlab&index=3&md5=04e5d5fb6e16d2164ecf7ea10a31a14c), a start-up accelerator run by the international aerospace pioneer. Aero Glass is partially funded by the European Union’s Horizon 2020 research and innovation program.

# Where is it used?

Aero Glass provides a unique turnkey solution addressing pilots' need to properly visualize terrain, navigation, traffic (ADS-B), instrument, weather, and airspace information with access to vital safety procedures and protocols, without the requirement of inspecting instruments, phone or iPad. Using Osterhout Design Group, Epson Moverio and other Head-Mounted Displays, Aero Glass is the first to bring Augmented Reality to pilots providing an unparalleled 3D, 360° experience in the cockpit, regardless of the visibility.

# The Basics

Through “custom head tracking system”, aero-glass software knows where the pilot is and where the pilot is looking. Small infrared which looks toward marker-board tells the software how the pilot turns or tilts his head. This way aero-glass software can understand where the pilot is looking at. This information combines with the attitude and position of the aircraft. Information about aircraft and navigation comes from F.A.A. (Federal Aviation Administration) which return into 3D database and load into the aero-glass smart glasses. For that matter, aero-glass software can know from where pilot is looking(location) and to where pilot is looking at. Live traffic data comes from Automatic Dependent Surveillance – Broadcast (ADS-B) receivers. Software runs on the ODG R-7 smart glasses which process all the data. It generates the 3D augmented reality symbology right in front of pilot’s eyes in an all around 360° view. The design is fully portable and can be installed easily on to any type of aircraft. No certification is required.

# Uniqueness

Aero-glass is unique because instead of having to mentally combining information from a chart or instruments and the scene around pilot, aero-glass shows everything important in natural 3D as the pilot looks around. This includes navigation points, airspaces, flight plan, airways, taxiways, terrain, other aircrafts and weather.

# Strengths and Weakness

Among the helpful features of aero-glass, providing accurate information and 360° 3D experience to pilot are two of the strongest among other features. Besides that, mobility and strong ability to easily adaptable to any kind of aircraft makes aero-glass more efficient and usable. It doesn’t lead any kind of dizziness and thus my rating for this product is 0 (no dizziness). Since it is pretty light (less than 0.18 kg) it is also as comfortable as daily glasses. For me, the only weakness this product has is pricing. If a user wants to use the software with full equipment it nearly costs $25000.

# Similar Applications

There is no similar application to aero-glass in aviation sector. However, there are some similar virtual reality applications for aviation maintenance training and some other applications to make pilot trainings more cost effective. However, none of them provides a real 360° 3D augmented experience. BISimulator is one of the application to make pilot trainings cost-efficient and EonReality application is for aviation maintenance training.

# Potential Applications

One of the potential application can be navigation for cars. Car drivers would simply follow a virtual car on the real road for navigation guidance to find their desired destination instead of looking at their GPS display inside the car. With Aero Glass, pilots and drivers can keep their eyes outside with key information overlaid transparently within their field of view. The solution will also enable autonomous vehicle drivers and passengers to visualize the “thought process” of their autonomous car while in progress, such as displaying an upcoming detour due to road construction.

# Conclusion

In conclusion, aero-glass is Aero-glass is an unique solution for pilots’ needs during flight and provides all-around 360° display capacity and experience in the cockpit regardless of visibility. Aero-glass will help the pilots of future to avoid costly mistakes and make timely decisions that will save lives.

# References

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