

OFFICIAL ABSTRACT and CERTIFICATION

Zoom Into the Future

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The goal of the project was to create a device to allow individuals with low vision to see farther than they normally could. The device used a 2-megapixel camera physically attached to the front of a head mounted display as a digital substitute for the user's normal vision. The camera output was connected to a computer which processed the data and displayed the results to the user. Software was written using the Java programming language to magnify and display the image in real-time and allow capturing and panning of the display data in the image set if desired. The system also changed the resolution of the captured image based on the user-specified zoom so that no more pixels would be captured than were needed. Finally, functionality was added to allow one camera to share its image over the local network, meaning that two blind users in a class room would not need two cameras and two front-row seats. It was found that at seven times zoom, a legally blind user with a vision acuity of 20/200 had their visual acuity increased to 20/50, a four times improvement. This means that the user could stand four times further from text and still read it. Also, it was demonstrated that the device could be used to read text written on a white board from a distance equal to the first or second row of a small classroom, enabling the user to participate in conventional academic instruction.

Category  
Pick one only—  
mark an "X" in  
box at right

- Animal Sciences
- Behavioral and Social Science
- Biochemistry
- Cellular & Molecular Biology
- Chemistry
- Computer Science
- Earth Science
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- Energy & Transportation
- Environmental Management
- Environmental Sciences
- Mathematical Sciences
- Medicine and Health
- Microbiology
- Plant Sciences
- Physics and Astronomy

1. As a part of this research project, the student directly handled, manipulated, or interacted with (check ALL that apply):

- human subjects
- potentially hazardous biological agents
- vertebrate animals
- microorganisms
- rDNA
- tissue

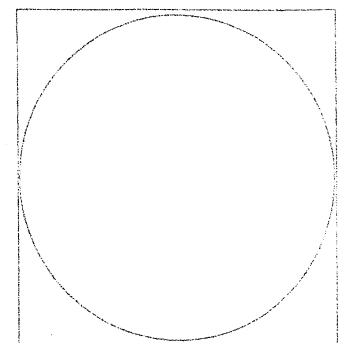
2. This abstract describes only procedures performed by me/us, reflects my/our own independent research, and represents one year's work only  Yes  No

3. I/we worked or used equipment in a regulated research institution or industrial setting:  Yes  No

4. This project is a continuation of previous research.  Yes  No

5. My display board includes non-published photographs/visual depictions of humans (other than myself):  Yes  No

6. I/we hereby certify that the abstract and responses to the above statements are correct and properly reflect my/our own work.  Yes  No



*This stamp or embossed seal attests that this project is in compliance with all federal and state laws and regulations and that all appropriate reviews and approvals have been obtained including the final clearance by the Scientific Review Committee.*