Achieving Synergism with Virtual Image Displays

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MITRE Sponsored Research

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Problem

- How can we apply augmented reality technology for combat support applications?
- How do we interface with data on virtual image displays?

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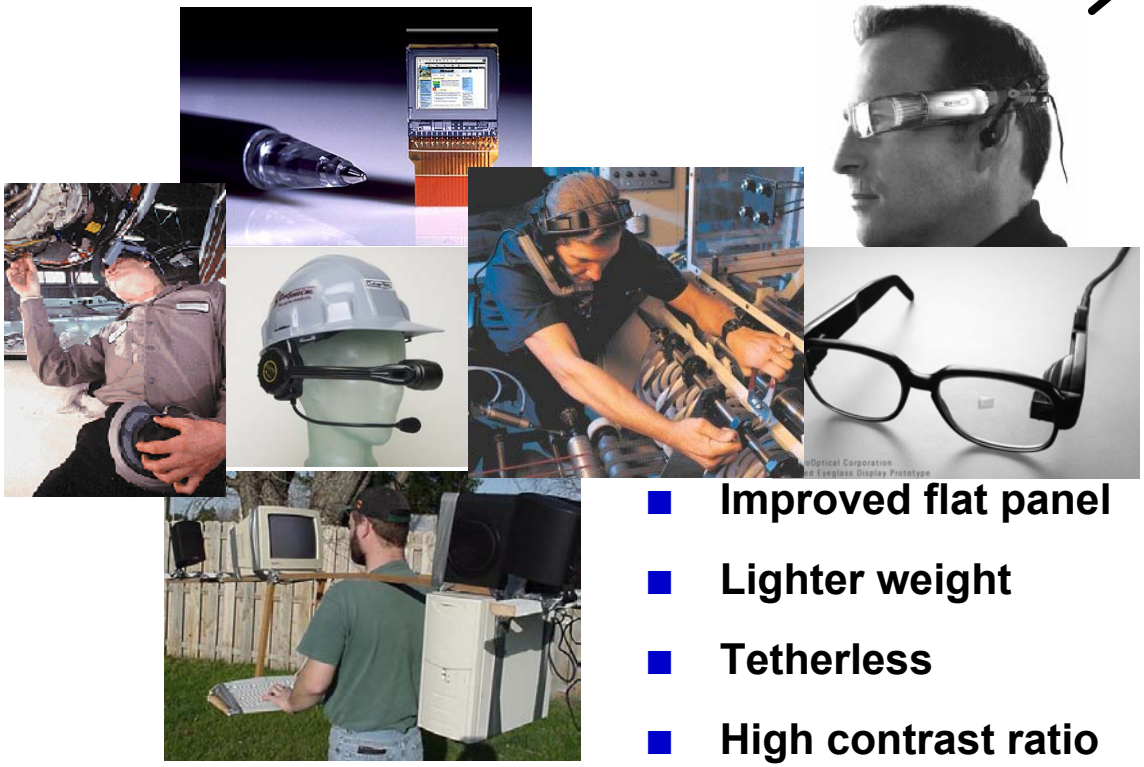
Background

Evolution of Virtual Image Displays

1990 — 2000 — Future

- CRT
- Heavy
- High voltage
- Monochrome



- Improved flat panel
- Lighter weight
- Tetherless
- High contrast ratio

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Objective

- Evaluate the use of augmented reality as an interface for wearable computing
- Determine the relationship between display features (e.g., registration accuracy, reliability) and the attention and trust allocated to that information

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Activities

- Head-up vs. head-down display comparison for navigation
- Air traffic control information overlays
- Laboratory study examining the relationship between display features - eye chart
- Explored ARToolkit for information overlays on video view of world

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Highlight

- Technology convergence
  - Position tracking devices
  - See-thru displays
  - Wearable computers, interface devices, HCI
- Potential applications
  - Air traffic control
- Command center information displays
  - Equipment maintenance and logistics

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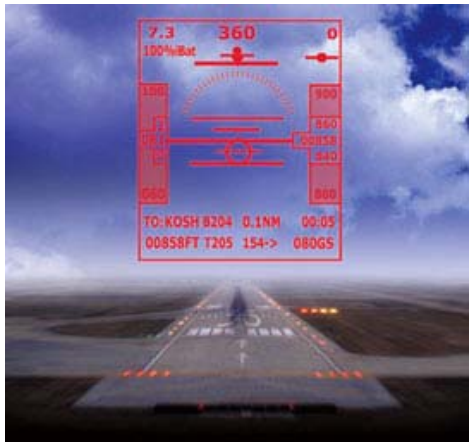

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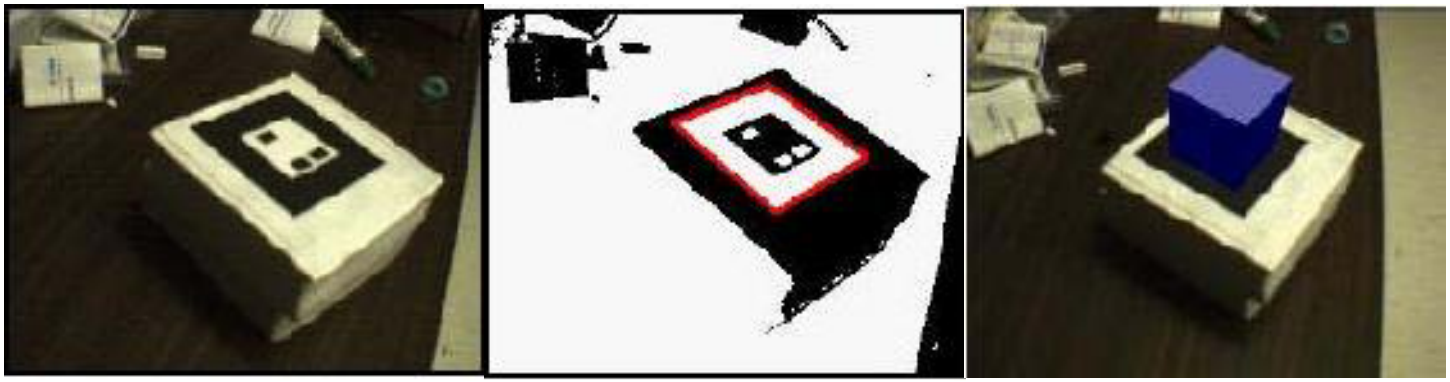
Demonstration

- Overlay virtual objects on the real world view
- Investigate registration effects using video overlays
- Integration of magnetic headtracker
- Use of ARToolkit as a baseline graphics package



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Impacts

- Academic/R&D Community
  - Invited speaker at WBR Soldier Technology 2002
  - Collaboration with United States Military Academy, Department of Behavioral Sciences and Leadership
  - Collaboration with MIT Media Lab on wearables and AR (DeVaul)
- Vendor Community
  - SBIR proposal submitted
- Work Program
  - Pursuing applications in decision support, sensor systems, CAASD, GATM

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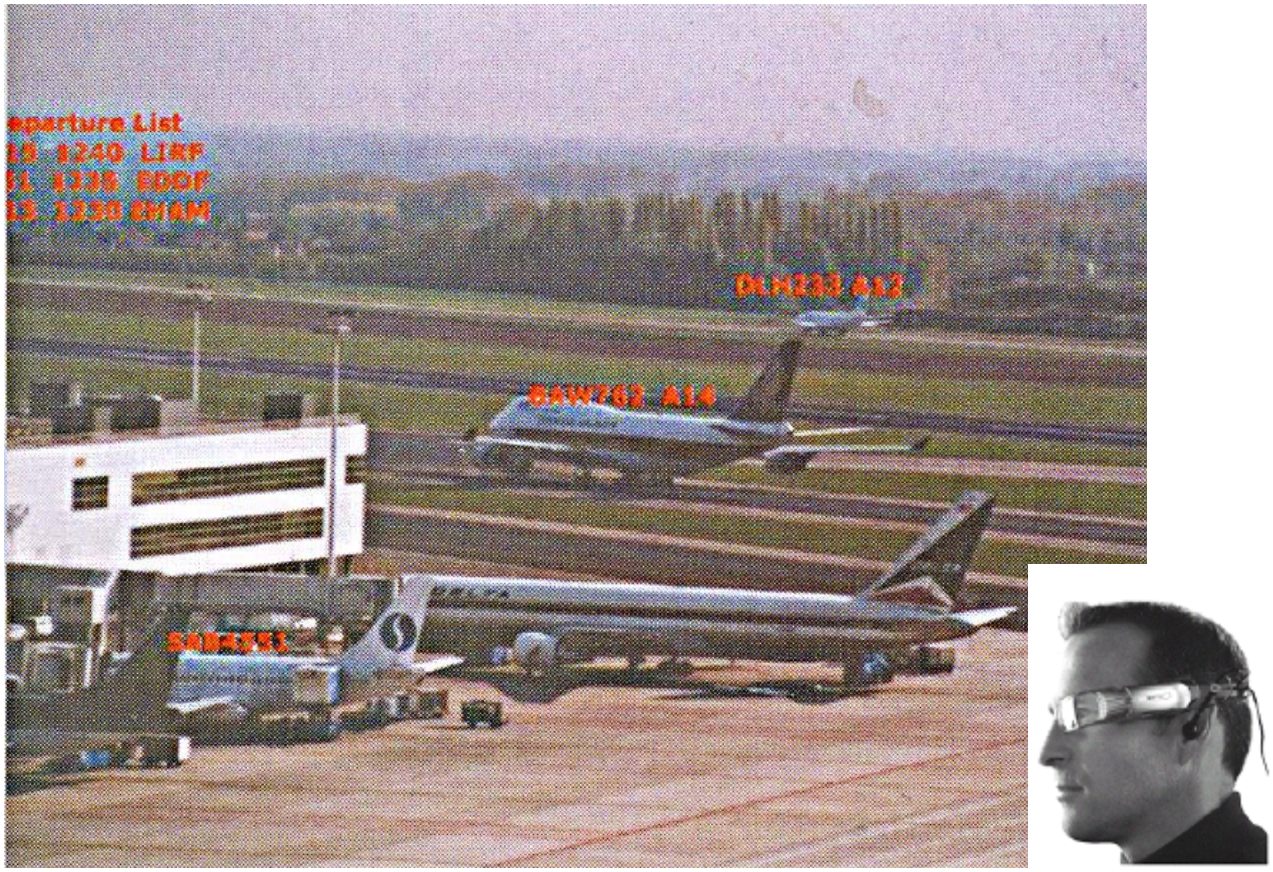
Future Plans



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