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Electronic Memory Aid Research

Personal Digital Assistants (PDAs) function as memory aids. Yet they only handle addresses, phone numbers, and appointments. The goal of our new research project is to prototype, design, construct, and evaluate a family of memory prostheses that will assist individuals in a wider range of circumstances in which they often forget things. Examples include helping people remember medications, instructions, directions, appointments, names, faces, numbers, and places, even where one has left the car keys.

We are currently conducting a needs analysis, designed to understand:

- the kinds of problems people have in remembering
- the conditions under which they forget
- the methods and mechanisms they now use to help them remember; and,
- the degree to which all of this varies with age.

We are also engaged in an envisioning and prototyping exercise. We recently created first design sketches of a plausible system and technologies that seem to address the needs as we understand them thus far. The system includes:

- an electronic notebook, size and aspect ratio of a medium picture frame
- augmented glasses with retinal display, microcamera, microphone, and earphone
- an enhanced watch designed primarily for control, and
- an electronic identification tag.

The devices are intended to interact with one another through wireless connectivity and with their users through multi-modal interfaces, i.e., interfaces in which input can be given either by hand or by voice, and in which output can be given either by visual or auditory means.

We have also developed a prototype of a new information management scheme for the notebook in which no explicit filing is required. Information may be retrieved from TimeStore using the time it was created, the people involved, the content of the information, and ultimately the place in which it was created.

Compelling research challenges and opportunities to be tackled next include:

- Expanding the scope of our needs analysis
- Designing a system architecture for the system of technologies
- Designing and building working models of some of the components.

We are soliciting feedback on our ideas and recruiting collaborators, especially those who work with aging populations and do research on human memory. If you would like to participate, or help sponsor the work, please contact:

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