6.811/PPAT Client Descriptions
September 2013

[Bracketed terms] indicate skill sets likely to be involved in working with the described client.

Barbara (augmented communication) [Audio/video processing, software]

Barbara has significant hearing loss and a cochlear implant. She often encounters professional situations in which a meeting is occurring around a conference room table, and she misses much of what is being said due to her reliance on lip-reading for augmentation of her hearing. She seeks a system that would show her a live and possibly enlarged image of the face and mouth of the current speaker. The system should be portable and easy to deploy onto a tabletop in a meeting with multiple participants, and should be robust to minor shifts in each participant's head angle, posture and seat position.

Brian (long cane) [Mechanical design, electronics]

Brian has low vision due to advanced Retinitis Pigmentosa. He functions well in familiar environment but is less confident in unfamiliar settings. Brian uses a folding long white cane but finds it unsatisfactory in several respects. He struggles with cane stowing and deployment, especially near other people when he fears injuring them through inadvertent release of energy stored in the cane's internal mechanisms. He also wants the cane to lean stably against smooth and hard surfaces, so that he can free both hands for tasks while he is standing. He desires a long cane that contracts and expands more easily, and can be kept alongside the body more easily. He also desires illumination integrated with the cane to increase his awareness of the walking terrain immediately ahead.

Jack (multi-modal mouse control) [Signal processing, device interface]

Jack lives with multiple sclerosis, and is physically immobile though he has some eye and head mobility. He uses Windows and a head tracker for mouse position control, and wishes to have more efficient and configurable drag and click functions while using the mouse. He wants to explore different control and timing methods to achieve satisfactory mouse functionality within his applications.

Janet (nurse-call system) [Audio processing, electronics]

Janet lives with MS. She has good voice function and low hand function. She desires a reliable voice-based method to activate the nurse-call system either from her bed or chair, and to receive immediate feedback that she has been successful. She would use the system a handful to a few dozen times per day. The system should operate with a tolerably low false-positive rate, or some other means (e.g. voice interaction with the nurse after a call) of preventing unneeded nurse trips.

Jonathan (voice pedometer) [Smartphone apps, embedded sensing]

Jonathan is blind. He is very physically active. He desires a device that will serve as a "voice pedometer," counting his steps/strides. He desires a simple interface that will report various quantities of interest (number of steps, distance traveled today or to date etc.) in audio format, in real-time, on the go. He is also interested in pulse-rate monitoring and logging. Finally, he desires the capability to upload fitness information to his home computer.

Liz (binocular holder) [Mechanical design, electronics]

Liz lives with MS and quadriplegia. She is a wheelchair user who relies on headband-based control of her wheelchair functions. She enjoys bird-watching, and seeks a way to mount her binoculars to her wheelchair. The mount should be easy for her PCA to attach and detach. It should support adjustment by Liz of the eyefit and elevation angle of the binoculars (possibly by coupling to the existing seating adjustment functions of her power chair), and possibly of their focus.

Marla (executive function) [Smartphone apps, interfaces]

Marla has been diagnosed with early-onset Alzheimer's disease and dementia. She retains her memory but has deficits in executive function and spatial reasoning. She often goes "off track" while conducting formerly routine activities such as shopping, serving coffee to guests, or importing and manipulating digital images as part of her photography hobby. Marla seeks an app, tailored to her places, activities, and preferences, that will help address her loss of executive function, with a particular focus on task sequencing and the spatial relationship between her body and the salient aspects of her surroundings.

Paul (environmental control) [Smartphone apps, image processing]

Paul is blind. His home stove/oven has a touchscreen which is effectively inaccessible to him. The interactive onscreen (soft-key) menus provide no audible prompts or feedback, making it difficult or impossible to know what is on the screen at a given time. Even with memorization and guesswork, Paul is unable to reliably activate and control the appliance. He desires an assistive technology, preferably a smartphone app, that will enable him to control this appliance independently.

Susan (environmental control) [Mechatronics, interface]

Susan lives with MS and has limited arm movement. She uses a power wheelchair and frequently travels along sidewalks. At many corners the extended pedestrian crossing light can be triggered only by physically pressing a button which is inaccessible to her. Susan seeks a way to push such crossing buttons independently.