1. The title of the proposed demonstration

    Handheld AR/AV indoor navigation and detailed instruction with contextual interaction

2. The names of the authors

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3. The name, telephone number and email address of the contact person

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4. A description of your demo including:
- What makes it unique and special
- Why will it draw a crowd?
- Would an AR expert want to see it and why?

    Our demo will show a handheld AR/AV system for indoor navigation to destinations and detailed instructions with contextual interaction. The system is capable of providing four crucial functions as follows.

    (1) Indoor navigation realized by the PDR (Pedestrian Dead Reckoning) localization method and map matching with the built-in sensors (3-axis accelerometers, gyroscopes and magnetometers) in hand-held devices.

    (2) Coarse estimation of location and orientation by making correspondence between Virtualized-Reality (VR) models of environments and images from the camera of the hand-held device.

    (3) Fine estimation of location and attitude of the hand-held by visual AR tracking methods.

    (4) Contextual AR/AV (Augmented Virtuality) interaction widgets.

    Any participant can have an experience with the AR/AV system, by which he/she is directed to search for a target object and get detailed instruction on the target with a help of the system.

    What makes our demo unique and special is the integration of the above four functionalities using a server-client system consisting of handheld devices and laptop PCs.

Our demo will draw crowds because any participants can have full experience with the AR/AV system just by being handed an iPhone (or iPad). Even AR experts are interested in the demo since the key AR technologies used in the demo system are still state-of-art and it is challenging to develop the fully integrated system.

5. Information about the demonstration space
    (1) The amount of floor or desktop space needed (length, width, height in meters)
        2.5 meter (length) x 2.5 meter (width) x 2 meter (height)
    (2) The list of equipment you will bring (be as detailed as you can be)
        iPhone 4 / iPad2 / laptop PCs / mobile Wi-Fi routers / Wi-Fi routers
    (3) Any power, socket and outlet needs
        500W. 5 sockets are required.
    (4) Networking requirements (ethernet, wifi, non-HTTP)
        Wi-Fi and Ethernet connection are required. We also use TCP/IP socket connection which is non-HTTP.
    (5) Any environment requirements (Does this demonstration require a dark environment? Does it produce or is it sensitive to a large amount of noise or light? Etc.)
        1) Participants are required to freely move around the demo environment.
        2) We need to construct a virtualized-reality model of the demo environment in advance like one day before the demo session will be held.

6. Optional URL of your demo video (Video in QuickTime, MPEG, or Windows Media Viewer not to exceed 50MB is recommended. Please do NOT send your video by email.)
    1) PDR localization demo video:
    http://www.youtube.com/watch?v=KW5SrXZ15R4
    http://www.aist-ari.org/movie/2009/IndoorPedestrianNavigation_ISMAR2009Long.mpg

    2) Context AR widget demo video: (For reviewers, since this video is confidential due to the request from our collaborator, please use it for review purpose only. In addition, the scenario of this video is on machine maintenance service, but we will tailor it more generally for ISMAR demo.)
    http://www.aist-ari.org/ISMAR11/2011_07_28_ARWidget.mov

User

Navigation
CONFERENCE
ROOM

Tracking

↑ iPhone4
→ Station

Close to the machine : Conditions list
Current machine state conditions selection