Bibliographie
Mobilité et Réalité augmentée urbaine

Classement par type de document / chronologique.

Entrée en matière

OUVRAGES

Aspects sociétaux

Kaplan, Daniel, et Thierry Marcou, La ville 2.0, plateforme d’innovation ouverte (FYP, 2009).

Marzloff, Bruno, Le 5e écran, les médias urbains dans la ville 2.0 (FYP, 2009).
« La ville devient numérique. Les façades et les mobiliers urbains deviennent des écrans. Le trafic routier, les communautés de quartier, les transactions marchandes ou relationnelles, les pollutions, les Vélib’ disponibles, chaque événement est une information qui circule instantanément à travers les réseaux de la ville. Cet échange instantané de données entre la ville 2.0 et ses usagers forment une sorte de réseau peer-to-peer. Cela permet de nouvelles formes de régulations de la ville : surveillance des pollutions, nouvelles pratiques sociales et économiques, cogestion de la mobilité, etc. […] Un nouveau média est né et va modifier radicalement notre vie urbaine et la façon de gouverner la ville : c’est le 5e écran. Le citadin lambda devient un média, un producteur d’information, et les prestataires de la ville (transport, afficheurs, services publics, etc.) deviennent les fournisseurs de nouveaux services urbains. Ce livre propose d’en comprendre toutes les implications et analyse comment cela va changer notre vie quotidienne dans la ville 2.0 ».

Wikipedia : GPS et malvoyants

‘GPS for the visually impaired - Wikipedia, the free encyclopedia’
“There have been many attempts at integrating Global Positioning System into a navigation-assistance system for the blind. GPS was introduced in the late 1980s and since then there have been several research projects. Satellite navigation complements existing aids like the White cane or guide dogs but does not replace them.”

Aspects techniques
“Virtual Manufacturing presents a novel concept of combining human computer interfaces with virtual reality for discrete and continuous manufacturing systems. The authors address the relevant concepts of manufacturing engineering, virtual reality, and computer science and engineering, before embarking on a description of the methodology for building augmented reality for manufacturing processes and manufacturing systems. […] Guiding readers through the building of their own virtual factory software, Virtual Manufacturing comes with access to online files and software that will enable readers to create a virtual factory, operate it and experiment with it. This is a valuable source of information with a useful toolkit for anyone interested in virtual manufacturing, including advanced undergraduate students, postgraduate students and researchers.

Kronhagel, Christoph, Mediatecture: The Design of Medially Augmented Spaces (Springer Verlag, 2010).
“Every era creates its own style having a strong impact on architecture and space. Through the growing importance of electronic media and the services provided by the internet, the delimitation between physical and virtual spaces is becoming increasingly fuzzy. Christoph Kronhagel, a worldwide renowned specialist for media facades and technology, gives these phenomena the collective name “mediatecture”, a compound of the words “media” and “architecture”. His book approaches the new phenomenon methodologically, in form of elements providing basic knowledge on mediatectonic work, in particular for media facades. […]”

Le coin des spécialistes

OUVRAGES À PARAÎTRE

“The use of mobile collaborative AR has expended rapidly in recent years, due to the major advances in hardware and networking. The application areas are diverse and multidisciplinary. Recent Trends of Mobile Collaborative Augmented Reality Systems provides a historical overview of previous mobile collaborative AR systems, presents case studies of latest developments in current mobile collaborative AR systems, and latest technologies and system architectures used in this field. Recent Trends of Mobile Collaborative Augmented Reality Systems is designed for a professional audience composed of practitioners and researchers working in the field of augmented reality and human-computer interaction. Advanced-level students in computer science and electrical engineering focused on this topic will also find this book useful as a secondary text or reference”.

Ouvrage à paraître (août 2011)

Poli, Corrado, Mobility and Environment: Humanists Versus Engineers in Urban Policy and Professional Education (Springer, 2011).
“Mobility and Environment calls for a mobility revolution which does not simply mean taking a bus instead of a car: it implies a dramatic shift in the political debate from a technical to a political culture. The author introduces his book by disputing “non-political” Sustainable Development policies which are among the major culprits for the conservatism in environmental policies. […] Nonetheless decision-makers keep employing the same professionals and therefore they act as shepherds who commit their sheep in the wolf’s custody. Corrado Poli treats mobility policy as a political, ethical, social and educational issue rather than as a mere civil engineering one. Mobility and Environment challenges some deeply entrenched professional and economic monopolies which negatively affect urban and transportation planning in North America and Europe, and argues the old idea which bounded transportation and communication. A real environmentalist effort in traffic planning should begin from new technologies and from the analysis of citizens preferences. A series of new projects are presented which include mobility demand reduction and focus on democracy in planning”.

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OUVRAGES

“Urban mobility is currently a major problem all over the world. Space is limited, and individuals aim for a level of quality in mobility that is only achieved by largely motorised solutions, which have a detrimental effect on the urban environment. Careful analysis of urban mobility systems across the world reveals that consistent and effective policies can only be defined and implemented if the various components of the system and their interrelations are considered. [...] The value of this book lies in bringing together a sound theoretical approach to urban mobility systems supported by evidence from several cities across the world where this approach was either implemented or at least assessed, together with clear instructional guidelines. It constitutes a handbook for practitioners, politicians, researchers and students of urban mobility management”.

Wang, Xiangyu, et Jerry Jen-Hung Tsai, Collaborative Design in Virtual Environments, 1er éd (Springer, 2011) <http://www.springerlink.com/content/978-94-007-0604-0>.
« Collaborative virtual environments (CVEs) are multi-user virtual realities which actively support communication and co-operation. This book offers a comprehensive reference volume to the state-of-the-art in the area of design studies in CVEs. It is an excellent mix of contributions from over 25 leading researcher/experts in multiple disciplines from academia and industry, providing up-to-date insight into the current research topics in this field as well as the latest technological advancements and the best working examples. Many of these results and ideas are also applicable to other areas such as CVE for design education. [...]”

Disponible sous forme électronique (intranet INRIA)

“This book is the companion of a previous volume by the same editors which was devoted to the Grand Challenge, which took place in the Nevada desert during October 2005, and was the second in the series of autonomous vehicle races sponsored by DARPA. The Urban Challenge demonstrated how cutting-edge perception, control, and motion planning techniques can allow intelligent autonomous vehicles not only to travel significant distances in off-road terrain, but also to operate in urban scenarios. Beyond the value for future military applications—which motivated DARPA to sponsor the race—the expected impact in the commercial sector for automotive manufacturers is equally, if not more, important: autonomous sensing and control constitute key technologies for vehicles of the future, and might help save thousands of lives that are now lost in traffic accidents.”

“This book provides a long-overdue vision for a new automobile era. The cars we drive today follow the same underlying design principles as the Model Ts of a hundred years ago and the tail-finned sedans of fifty years ago. In the twenty-first century, cars are still made for twentieth-century purposes. They're well suited for conveying multiple passengers over long distances at high speeds, but inefficient for providing personal mobility within cities—where most of the world’s people now live. In this pathbreaking book, William Mitchell and two industry experts reimagine the automobile, describing vehicles of the near future that are green, smart, connected, and fun to drive. [...]”

Klein, Georg, Visual tracking for augmented reality edge-based tracking techniques for AR applications (Saarbrücken: Vdm Verlag Dr Muller, 2009).
“In Augmented Reality applications, the real environment is annotated or enhanced with computer-generated graphics. These graphics must be exactly registered to real objects in the scene and this requires AR systems to track a user’s viewpoint. This book shows that visual tracking with inexpensive cameras (such as those now often built into mobile computing devices) can be sufficiently robust and accurate for AR applications. Visual tracking has previously been applied to AR, however this has used artificial markers placed in the scene; this is undesirable. This thesis explores edge-based tracking as an efficient and accurate alternative, and explored methods to improve the robustness of edge-based tracking against rapid user motions. This thesis also shows how CAD models of the scene can be used
to correctly clip virtual graphics, improving the perceived realism of the scene".
Disponible dans le service IST INRIA Rennes

"Virtual Reality has turned the corner from being a mere laboratory novelty to become a valuable tool with practical applications in many fields. From best-selling VR guru Bill Sherman comes Developing Virtual Reality Applications - a comprehensive compendium that examines over 50 unique and foundational VR applications in Business, Science, Medicine, Education, Spatial Studies, Public Safety, and Entertainment industries[...] The book also cross-references techniques between different application areas, synthesizing the data into a coherent whole that describes overall VR trends and fundamental best practices. Such synergy gives you a hands-on guide for developing your own applications, and provides an enhanced, longitudinal view of VR development. By promoting mobility across disciplines, Developing Virtual Reality Applications becomes an indispensable one-stop reference for anyone working in this burgeoning field.[...]

"Multimedia Cartography provides a contemporary overview of the issues related to multimedia cartography and the design and production elements that are unique to this area of mapping. The book has been written for professional cartographers interested in moving into multimedia mapping, for cartographers already involved in producing multimedia titles who wish to discover the approaches that other practitioners in multimedia cartography have taken and for students and academics in the mapping sciences and related geographical fields wishing to update their knowledge about current issues related to cartographic design and production. It provides a new approach to cartography – one based on the exploitation of the many ‘rich media’ components and avant-garde approach that multimedia offers".

CONFÉRENCE À VENIR

"Mixed Reality (MR) and Augmented Reality (AR) allow the creation of fascinating new types of user interfaces, and are beginning to show significant impact on industry and society. The field is highly interdisciplinary, bringing together signal processing, computer vision, computer graphics, user interfaces, human factors, wearable computing, mobile computing, computer networks, displays, sensors, to name just some of the most important influences. MR/AR concepts are applicable to a wide range of applications. Since 1998, ISMAR and its forerunner events, IWAR/ISAR and ISMR, have been the premier forums in this vital field."

COMMUNICATIONS AVEC ACTES

« This year’s ISMAR already marks its 9th occasion and it seems that mixed and augmented reality technology has finally come of age, attracting the due attention from the general public. This is especially due to the popularity of the smart mobile devices, and thus, it is quite fitting that ISMAR is being held in Seoul, one of the most networked and dynamic place in adopting new information technology and their deployments. Especially with recent explosion of smart phones, Korea may provide a fertile ground for the wide deployment of mobile augmented reality technology on smart phones."

Disponible sous forme électronique (intranet INRIA)
The objective of this W3C workshop Augmented Reality on the Web is to provide a single forum for researchers and technologists to discuss the intersection of AR and Web technologies, particularly as used on the mobile platform, and to explore what role standardization should play for Open Augmented Reality.


"This study assessed participant performance of an outdoor navigation task using a mobile audio augmented reality system. Several quantitative performance measures and one subjective measure were used to compare the perceptual efficacy of Ambisonic and VBAP binaural rendering techniques, and a range of head-turn latencies. The study extends existing indoors research on the effects of head-turn latency for seated listeners. The pilot experiment found that a source capture radius of 2 meters significantly affected the sole participant's navigation distance efficiency compared to other radii. The main experiment, using 8 participants, found that render method significantly affected all performance measures except subjective stability rating, while head-turn latency only affected mean track curvature and subjective stability. Results also showed an interaction in which the choice of rendering method mitigated or potentiated the effects of head-turn latency on perceived source stability".


"Augmented reality is one of the emerging technologies to reconstruct the historical building and monument in the previous era, where the user experiences with the real environment or virtual scene. In education, Virtual Heritage becomes as a platform of learning, motivating and understanding of certain events and historical elements for the students and researchers. The significance of reconstruction of digital culture heritage are to preserve, protect and interpret of our cultural and history. In recent year, there are a number of significant researches and techniques that have been developed, which is focusing on virtual restitution of historical sites. This paper will present an overview on augmented reality in Virtual Heritage system and also consists with the explanation of techniques to reconstruct the historical sites".


"Augmented reality (AR) environment allows user or multi-user to interact with 2D and 3D data. AR simply can provide a collaborative interactive AR environment for urban simulation, where users can interact naturally and intuitively. AR collaboration approach can be effectively used to develop face to face interfaces. This is because AR provides seamless interaction between real and virtual environments, the ability to enhance reality, the presence of spatial cues for face-to-face and remote collaboration, support of a tangible interface metaphor, the ability to transition smoothly between reality and virtuality. [...] This paper will give an overview for collaborative AR framework employed in urban simulation and the multi-user interaction on how to share these virtual spaces with other users in collaboration. The work will also cover numerous systems in different cases of collaborative AR environments for multi-user interaction."
We present a web-based, multi-lingual, campus guidance system with emphasis on pedestrian navigation aimed at providing support for delegates attending International Conferences at the National University of Ireland Maynooth (NUIM) campus. A special campus guidance system could improve the logistics of the conference and potentially attract more delegates to the conference. The Cloudmade Web Map Lite API which uses OpenStreetMap has been used for creating this interface. The system generates shortest pedestrian paths using both outdoor pavements and indoor corridors between various buildings and points of interests (POI). For visual assistance in pedestrian navigation geotagged images are used along the path at certain points in the route, such as road intersections, when the user needs to get their orientation correct. The interface is currently available in both English and Chinese language.

Disponible sous forme électronique (intranet INRIA)
This paper proposes tangible interfaces and interactions for authoring 3D virtual and immersive scenes easily and intuitively in tangible augmented reality (AR) environment. It provides tangible interfaces for manipulating virtual objects in a natural and intuitive manner and supports adaptive and accurate vision-based tracking in AR environments. In particular, RFID is used to directly integrate physical objects with virtual objects and to systematically support the tangible query of the relation between physical objects and virtual ones, which can provide more intuitive tangibility and a new way of virtual object manipulation. Moreover, the proposed approach offers an easy and intuitive switching mechanism between tangible environment and virtual environment. This paper also proposes a context-adaptive marker tracking method which can remove an inconsistent problem while embedding virtual objects into physical ones in tangible AR environments. [...]".

Disponible sous forme électronique (intranet INRIA)


“The visualization of spatial information in the form of maps is a critical task to facilitate decision making in environmental management. Web Map Services (WMS), Styled Layer Descriptor (SLD) and Symbology Encoding (SE) already created an open framework for Web mapping services. However, from the cartographic point of view, the OGC standards have several limitations for producing high quality cartographic representations. Fortunately, these standards can be cartographically enriched to fulfill the complex visualization requirements coming from environmental management. A solution to creating cartographic visualizations based on open standards was developed in the frame of two major European projects, namely ORCHESTRA (Open Architecture and Spatial Data Infrastructure for Risk Management) and SANY (Sensors Anywhere). [...]”.

Disponible sous forme électronique (intranet INRIA)


“Paper maps and mobile electronic devices have complementary strengths and shortcomings in outdoor use. In many scenarios, like small craft sailing or cross-country trekking, a complete replacement of maps is neither useful nor desirable. Paper maps are fail-safe, relatively cheap, offer superior resolution and provide large scale overview. In uses like open-water sailing it is therefore mandatory to carry adequate maps/charts. GPS based mobile devices, on the other hand, offer useful features like automatic positioning and plotting, real-time information update and dynamic adaptation to user requirements. While paper maps are now commonly used in combination with mobile GPS devices, there is no meaningful integration between the two, and the combined use leads to a number of interaction problems and potential safety issues. In this paper we explore the design space of augmented paper maps in which maps are augmented with additional functionality through a mobile device to achieve a meaningful integration between device and map that combines their respective strengths”.

Disponible sous forme électronique (intranet INRIA)


“This paper describes the design of an optical see-through head-mounted display (HMD) system for Augmented Reality (AR). Our goals were to make virtual objects “perfectly” indistinguishable from real objects, wherever the user roams, and to find out to which extent imperfections are hindering applications in art and design. For AR, fast and accurate measuring of head motions is crucial. We made a head-pose tracker for the HMD that uses error-state Kalman filters to fuse data from an inertia tracker with data from a camera that tracks visual markers. [...]”.

Disponible sous forme électronique sur internet

Two new lightweight systems for delivering spatialized, augmented-reality audio (SARA) are presented. Each comprises a set of earphone drivers coupled with "acoustically transparent" earpieces and a digital filter. Using the first system, subjects were able to localize virtual auditory space (VAS) stimuli with the same accuracy as when using earphones that are standard for presentation of VAS, while free-field localization performance was reduced only slightly. The only disadvantage of this system is that it has a poor low-frequency response. […]"


"The OpenStreetMap project is a knowledge collective that provides user-generated street maps".


"In this paper, we propose the use of specific system architecture, based on mobile device, for navigation in urban environments. The aim of this work is to assess how virtual and augmented reality interface paradigms can provide enhanced location based services using real-time techniques in the context of these two different technologies. The virtual reality interface is based on faithful graphical representation of the localities of interest, coupled with sensory information on the location and orientation of the user, while the augmented reality interface uses computer vision techniques to capture patterns from the real environment and overlay additional way-finding information, aligned with real imagery, in real-time. […]"

Outils et applications

Equipes de recherche / Sociétés commerciales

'Points of Interest Working Group' <http://www.w3.org/2010/POI/> [accédé 16 Mars 2011].
"The mission of the Points of Interest Working Group, is to develop technical specifications for the representation of "Points of Interest" information on the Web".

'Project WAM' <http://wam.inrialpes.fr/> [accédé 16 Mars 2011].
« Project WAM aims at making it easier to develop and use rich multimedia contents and applications on the web. Particular attention is paid to documents and applications that tightly integrate different types of media objects, be they discrete (text, images, equations) or continuous (video, audio, animations)."

"CORONA is part of the Route Charlemagne and is one of the major experiences we develop for the city hall of Aachen. The goal of CORONA is to create an interactive audio experience in the coronation hall located in the city hall of Aachen, Germany. There are only few visual cues in this 45m x 20m large site that indicate what important ceremonies took place in this hall and, as the hall is still used for festivities, it is not possible to install exhibits that would overcome this problem. Also, the visual impression of this historical site was not to be modified, so we decided to augment the physical space with a virtual audio space".

Selected papers about Sensory substitution and navigation system for visually impaired people, Virtual environments, social interaction and presence, Auditory space perception, Motion perception and structure-from-motion."

ARTEFACTO' <http://www.artefacto.fr/> [accédé 16 Mars 2011].
Société spécialisée en simulation urbaine.
Présentation d’un outil de cartographie.

Layar propose une plateforme de réalité virtuelle.

Centre de Culture Scientifique Technique et Industrielle de Grenoble.

‘ST-Ericsson - Mobile Platforms, Wireless, Components, Bluetooth, WLAN, GPS, FM, USB ‘
“ST-Ericsson is a world leader in development of wireless platforms and semiconductors”.

Concepteur et Fabricant de modules à microcontrôleur.

« "Our aim is to make life simpler and easier for every Smartphone user, by providing an intuitive Pedestrian navigation application both on outdoor and indoor environments."