

Virtual Classrooms: Making the Invisible, Visible

(a work in-progress paper)

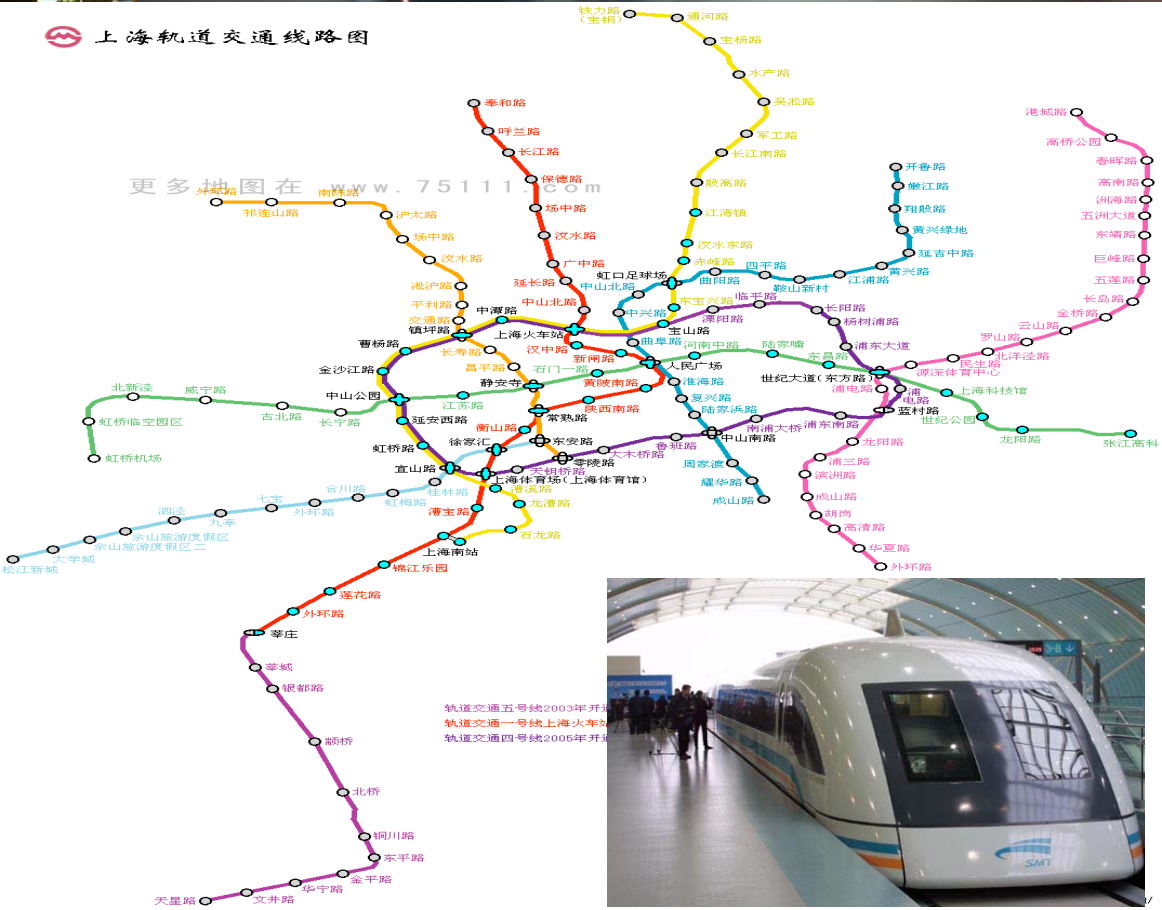
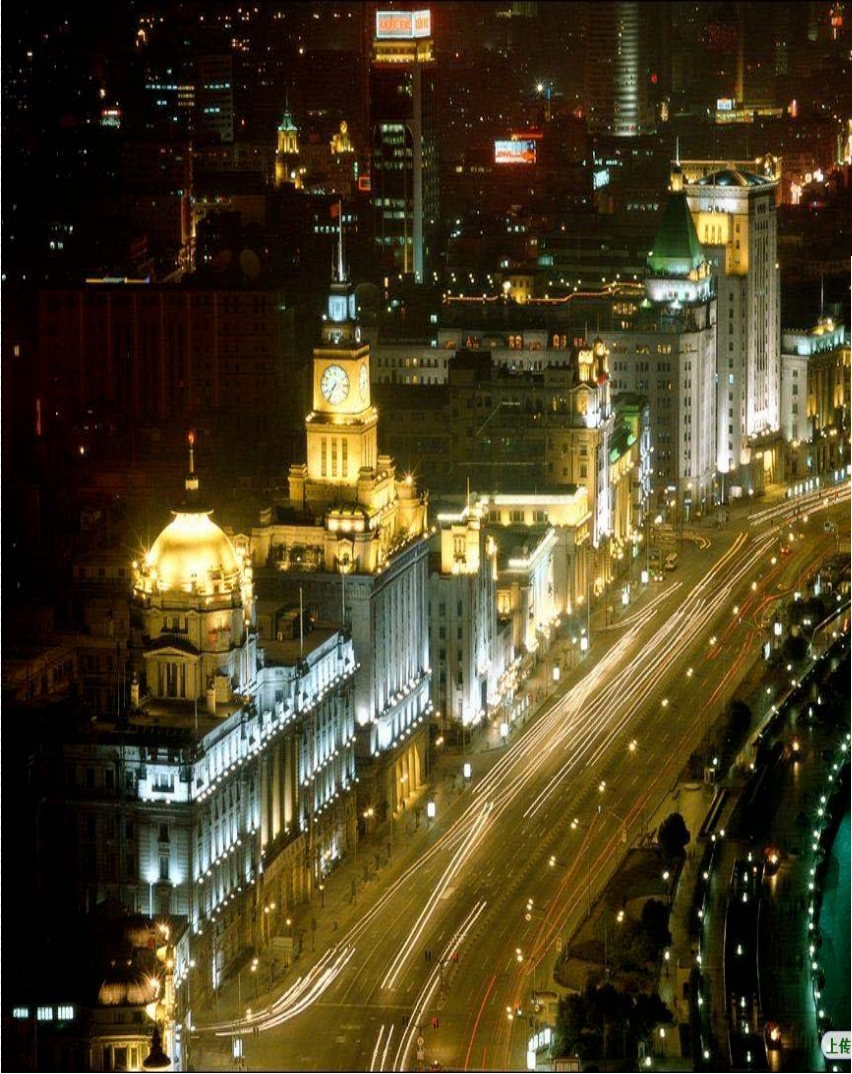
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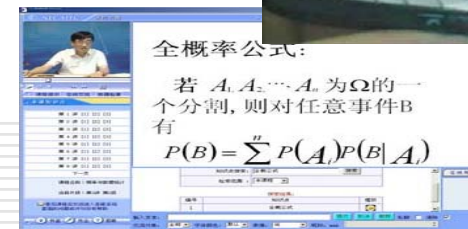


- ❑ Founded in 1896.
- ❑ 20 academic schools More than 2800 members of faculty, 38,000, full-time students (18,000 undergraduates, 18,100 Master, and Doctor's candidates).
- ❑ SJTU is beautiful, occupying an area of more than 200 hectare in total.

E-Learning in SJTU

Two learning approaches in e-learning platform:

- live classroom broadcasting
- web-based learning



SNC(Standard Natural Classroom)

Smart Board
Supporting Multiple Lecture Notes (Word, PPT), Handwriting


Lecture Notes Screen
Play the Multiple Lecture Notes (Word, PPT), Handwriting

Feedback Screen
Supporting the Real Time Interactive System (response or voting from students by shot messages...)

Monitor Camera
Supporting the Student Attention System (Capture absquatulators in the classroom)

Localizer Camera
Supporting the Teacher Tracking System (Auto-track according to the teacher's locomotion)

E-Pen
Supporting the Laser Track System (Infrared Sender)

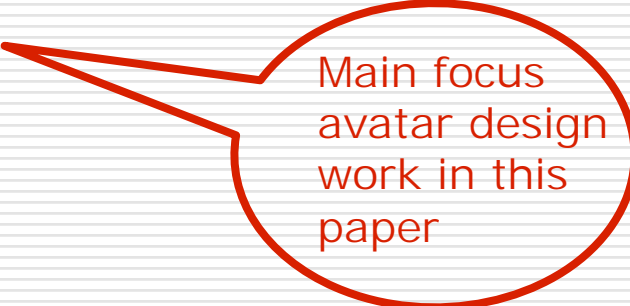


- Local lecture classroom
- Remote concentrated classroom
- Remote-home learning
- Mobile phone learning

More than 500 students in a class!

Web-based Learning supplemented with many Supporting Subsystems:

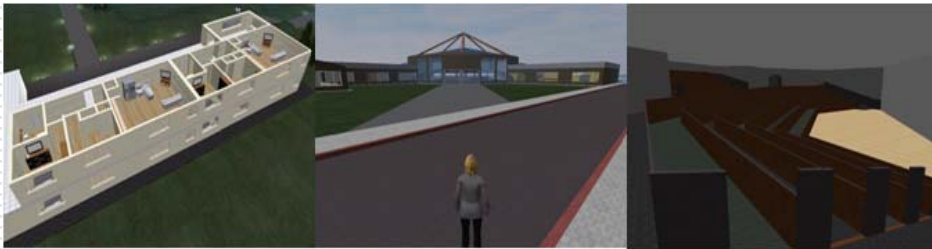
- Intelligent answer machine (IAM)**
- Content-based Index and Retrieval
- Learner Profile and Data Mining
- Self-Organized Communities
- Personalized Learning Services
- Collaborative Learning Activities



Main focus
avatar design
work in this
paper

Virtual Reality & The Essex iWorld

□ VR technology can 'make the invisible, visible'



iWorld



iSpace

- Essex---iWorld: an extensive multi-building virtual environment and toolset
- iWorld is a mixed reality intelligent environment, a virtual world linked to a real space. Changes made to devices in one world can be made to reflect in the other world

"Tales From a Pod" – A 2010 SFP

iPods were effectively small cocoons; something like a comfortable armchair enclosed within a sound-proof egg-like structure packed with sophisticated but largely invisible technology that included interactive 3D sensory/effector systems (sound, vision and haptics). When participating in a movie (the industry had long dropped the word "watching" which describing these new immersive movies) the 3D technology aimed to make the participant feel as though they were truly part of a fictional physical world.

ADDICTIVE TECHNOLOGY EPOD-4

In this increasingly competitive world, where knowledge determines success, your child deserves the very best education available and that is Addictive Technology's **EPOD-4**

Pioneering research by Benjamin S. Bloom in the 1980s (and supported by all work since) proved that students who receive one-on-one tuition learn at least an order of magnitude better than grouped students. If you want to give your child the best one-to-one education in the world, give them an Addictive Technology's ePod-4

Education:

- Super-Intelligent Artificial Teachers
- Personalised one-to-one tuition (the gold standard)
- Teacher's avatar has visualisation powers that don't exist in physical space
- Available 24 hours a day, 365 days a year
- Learning environment (avatar, surroundings, lessons) can be tailored for each student
- Unwavering attention and happy disposition
- Compelling content combined with contextual delivery
- Teachers available in different cultures, ages, sexes and form



Technology

- **FREE-WILL 3** © - Quantum processor (upgradable)
- **MY-MIND 1.2** © - Evolving Persona Engine (customizable)
- **FLAME 5** © - EmotionWare
- **GET REAL 8.2** © - Mixed Reality Cocoon
- **REAL-TOUGH** © iSkin & Haptics
- **GHOST 4.1** © - 3D Imaging & Audio
- **SENTINET** © - Knowledge Engine

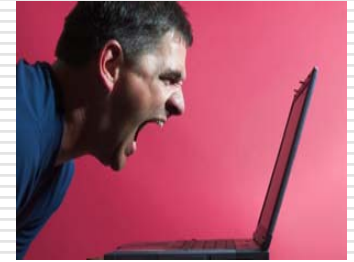
Addictive Technology, Zizhu Science Park, No. 880 Zi Xing Road, Minhang, Shanghai 200241, China



We focus on these issues:

For students (remote-home):

- Do not feel they are in a real class
- Do not see other students, feel lonely
- Lack live interaction and mutual support
- Lack individual attention



For teachers:

- Lack an overview of all learners
- Lack interactive activities with all learners
- Do not get timely feedback from all learners



Our idea: **Making the invisible, visible**

The Virtualised Learning Model:

- Using VR as a Solution to Visualise Online Meta-Learning Data
- Forming Self-Organizing Learning Communities (selected by student, teacher or automatically)
- Visualising Learner Learning Communities (compressing groups into virtual individuals)
- **Integrating the IAM into the Virtual Classroom in the form of embodied Avatar (provides individual attention)**



A group avatar



A personalized avatar

Immersive learning ePod (educational pod)

- Produced by Immersive Displays Ltd & called the ImmersaStation (on display at iC'11)



Under Way & Future Work:

- Building 3D virtual world with avatars of teachers and learners
- Dynamically assigning learners to groups according the IAM and Q&A
- Supporting representation of dynamic communities.
- Integrating the IAM to provide appropriate information to the teachers, learners and teacher assistant avatar.
- Providing interfaces for the teacher, IAM and the learner to question and answer
- Integrating this architecture into the immersive learning pod.



Thank you!

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