SERVICE

GATE — Game research for training and entertainment

Research Meets Business

On February 10 the GATE project organized the meeting Research meets Business. Even though it was snowing heavily and the traffic jams were huge, the meeting brought together around 50 people of which about half came from the GATE project and half came from the Dutch game industry. The goal of the meeting was match-making between the researchers and the developers to stimulate further collaboration.

During the meeting the researchers gave short pitches on the work done so far in the project and the results obtained. They for example presented results on automatic creation of landscapes, on measuring the affective quality of virtual worlds, on simulating large crowds of computer-generated characters, on explainable artificial intelligence, on computer animation, on gesture recognition, on brain-machine interfaces and on transfer of gaming. During a long poster session they further explained their work to the many interested developers.

We also discussed the research challenges for the future. Michaël Bas (RANJ), Arjan Brussee (Guerrilla Games), Pjotr van Schothorst (VSTEP), Jan-Pieter van Seventer (Dutch Game Garden) and Martin de Ronde (One Big Game) presented their views on the future. They for example indicated the need for intelligent tutors in serious games, the need for techniques for automatically generating assets and even for procedural game mechanics, the shift from precomputation to brute-force computation on the fly, and the role of artists in future technological developments.

During the poster session and the drinks many contacts were made and we are confident that this will lead to future collaborations between the game researchers and the companies. The GATE project will encourage such collaborations through knowledge transfer projects, for which considerable budget is available. Clearly such projects are open for all game companies, not only those that were present at the meeting. If you are interested, more information about the GATE project can be found on the website www.gameresearch.nl, or you can contact the project manager Piet Buitendijk (pietb@cs.uu.nl). We look forward to working together with you all.

Mark Overmars
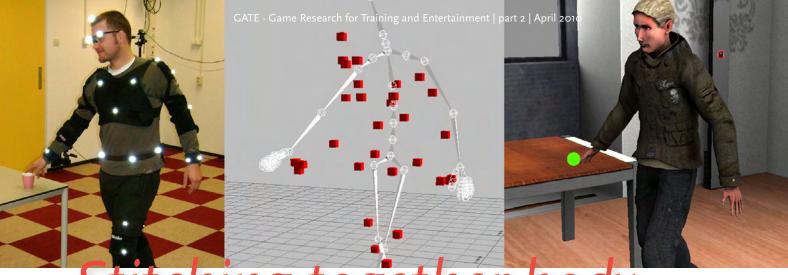Utrecht University
Director GATE

Days for Game Researchers

The GATE project and the Dutch chapter of the Digital Games Research Association (DIGRA) regularly organize meetings in Utrecht in which the Flemish and Dutch game researchers listen to presentations and discuss the current and future research challenges. During the last meeting on February 19 Tanja Sihvonen from the University of Tampere talked about Social play as design framework and Bob de Schutter from the Catholic University of Louvain talked about The appeal of digital games for an older audience. The next two meeting will be held on April 23 and on June 18 from 15.00 till 18.00 hours. Participation in these meetings is free and open to everybody. It is necessary, though, to register. For announcements see the GATE website www.gameresearch.nl.

Academic Education in Game Technology

To effectively do scientific research in the area of game technology and to make it easier for such research results to anchor in the game companies it is important that on an academic level students are educated in the area of game technology. To this end Utrecht University will start coming september with a study program on game technology as part of its bachelor computer science. In this program students will follow courses that focus on important computer science topics related to game technology, for example graphics, 3D modeling, artificial intelligence, networks, and interaction technology. The students will also get basic knowledge on game design and do various projects in which they create games, together with students from the Utrecht School of the Arts. After the bachelor the students can follow the international master program on Game and Media Technology that Utrecht University offers. Here they can further specialize in the development of new game technology. For more information on the curriculum, and examples of work of students, see the website www.gametechnologie.nl.

GATE.GAMERESEARCH.NL

Control.

Stitching together body parts for natural animation

New techniques that make the character perform mundane tasks more realistically.

Natural movement of game characters is very important in games and simulations. However, specific tasks such as opening doors or picking up a gun are often poorly animated in games. Ben van Basten, PhD student in the Games and Virtual Worlds Group at Utrecht University, is developing techniques that make the character perform these tasks more realistically.

When you take a look at recent games such as Assassin's Creed it is clear that the movement of the main character looks fairly good. The main character runs and walks around very convincing.

See image at the top: A game character can be animated using motion capture technology.
A common technique to create these realistic animations is to use motion capture systems. Here, an actor is put into a suit that has reflecting balls, called markers, attached to it. Special cameras can track these markers. Using the positions of the markers it is possible to have a game character perform the exact same movement as the actor.

Picking up a cup

Assassin's Creed contains more than 13.000 recorded animations. Recording so many animations cost a lot of money and still many actions are not properly animated. For example, when a character wants to pick up a cup from a table, the character will walk towards the table, stop walking, turn, and perform the required task. In reality however, humans will prepare for the grasping by already starting to reach for it during walking. What we also see in games is that a gun lying on the floor suddenly "pops up" in the hands of the character. The major problem is that we cannot record all possible "walking-and-picking-up" actions. The environment and its objects can always change. Therefore there is a need for techniques that generate motions that do the tasks described above and look as good as real recorded motions.

In the technique Van Basten and colleagues are developing the problem is simplified by splitting the body into an upper and lower part. Motions are generated separately for the upper body (picking up an object) and lower body (walking). The upper body arm motion is created using techniques from robotics. The lower body motion is created by combining and reusing recorded walking motions. After the animations for both the upper and lower body are created, they are stitched back together. Currently, human experiments are being performed to determine the best way to stitch generated upper and lower body motions together.

Ben van Basten and his colleagues think that many game companies can benefit from this new technique. First of all, the technique can generate animations that walk and pick up objects simultaneously, which is not possible with current techniques. Second, our technique requires less recorded motions. Game companies can therefore spend more time and money on other aspects of the game.

Ben van Basten is a PhD student at Utrecht University in the field of Computer Animation. He is especially interested in the animation of combinations of manipulation and navigation. In the past, he worked at TNO Defence, Security and Safety in the group Modeling and Simulation after he also did his master project (Path planning and online obstacle avoidance in weighted regions) in the same group. Ben is involved in the GATE project "Animating Navigation and Manipulation".