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Professor Aljosa Smolic

SFI Research

Professor of Creative Technologies

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“We have Augmented Reality in our hands right now with the latest iOS phone, so interest is about to explode and we’ll see a lot of apps coming out this year, as well as enabling devices like headsets and glasses. Tim Cook, CEO of Apple, has said that Augmented Reality is a big idea, like the smartphone so that gives you an idea of the scale of it.”

Professor Aljosa Smolic, the inaugural SFI Research Professor of Creative Technologies in Trinity’s School of Computer Science and Statistics, is talking about his cutting-edge research and how he and his team are contributing to the next big thing in technology.

He explains Augmented Reality (AR) for the lay person: “It’s the integration of virtual and real-world elements. AR enhances your perception of reality through adding computer-generated or extracted sensory input like sound, video, or graphics. *Pokémon Go* was the first big experience of AR for lots of people and its success is an indicator of how popular this will be. It’s not all entertainment – AR has applications for industrial design, for architecture, navigation, health – you’ll be able to visualise your medical data on your phone.”

His team works on the algorithms and maths behind AR: “We process the visual info that operates on pixels – so everything that happens in between capturing an image and displaying it.” These algorithms can be used by diverse industries but his team is also looking for applications – “down the line we’ll be partnering with companies to commercialise our ideas.”

To showcase their research, they recently teamed up with Trinity’s Department of Drama, School of Creative Arts for a production of Samuel Beckett’s *Play*. “Using several cameras from different angles, we captured three actors on stage in green screen and then converted this into something the audience can visualise in 3D, with a head-set.”

Play was shown in Front Square for the Probe Science Night at the end of September and during the Dublin Theatre Festival in October. Another project he’s working on is with the Library: “We’re going to create an app where you can visit a part of the Library, and be immersed within it – it won’t be just visualisation, there will be a dynamic element, with maybe an actor.”

Professor Smolic has only been in Dublin a year, and most of his time has been spent designing lectures and courses within the School of Computer Science and Statistics, and putting together his research team. Creative Technologies is a new professorship within Trinity. “My SFI grant allows me to finance over 20 researchers, to create a group. We’ve finally got the whole team together, it’s very international, we have projects running and we’re getting out publications and prototypes.”

He comes to Dublin from Zurich where he was Senior Research Scientist and Head of the Advanced Video Technology Group in Disney Research Zurich. “Disney founded two research labs in 2008,” he explains, “one in Pittsburgh and one in Zurich.”



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“The driving force for this was the success of Pixar, which was this brilliant combination of art and technology, animators working with computer scientists. Disney had been buying in technology, but they realised the game-change and they acquired Pixar and set up their own research labs.”

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He enjoyed his time there, but having come from an academic background – scientific project manager with the Fraunhofer Heinrich-Hertz-Institut (HHI) in Berlin – he wanted to return fully to research, without ties of company needs, and to connect with students. “The SFI professorship was very attractive, and of course I’m delighted to be in Dublin and Trinity – although things have been so busy, the most time I’ve had to explore the city is my weekly run along the coast.”

Trinity is the latest development on a career path which, he says, “has never been linear”. Born in Austria, then lived briefly in Croatia, before moving with his family to Germany when he was three. At that time, the Wall was still up: “I grew up in West Berlin, which was like an island in the East. It was a very interesting environment – a lot of alternative people and a great music scene, David Bowie lived there for a while. But to get out of the city, you had to take a train for three hours. From my bedroom window I could see over the Wall to a forest, which I couldn’t get to.”

When he was twenty, the Wall came down and he could finally walk in the forest. By this time, he was a student at the Technical University, TU Berlin, “looking for a subject to study”. At school, he liked everything – “from philosophy to physics, all subjects, and I was playing in a number of bands hip-hop, grunge, folk.” At TU Berlin, he tried out studying philosophy, psychology, and biology, and outside class he was using the latest computer technology to record audio signals for his band. “It was maybe a bit disorienting to be interested in so many things. Then I found out that at TU Berlin you could study audio engineering and signal processing.”

This turned out to be the perfect discipline for him. He got more into the maths and physics of it and when he applied for a job in the Fraunhofer Institute, he moved from audio processing to image processing, which remains his field today.

With all the big players investing heavily in AR, it’s about to explode. Professor Smolic is in the dynamic position of having grown up with the industry – “I’ve been putting virtual and real things together, reconstructing real-world environments, for 15 years” – and his diversity of interests, including in philosophy and psychology, gives him a broad outlook.

“Where might AR and virtual reality take us? Will we get into the Matrix – with people becoming junkies for the virtual world, leaving the real world? Yes, I’m interested in all that. Trinity is such a multidisciplinary environment – this could be a great place for engineers, computer scientists, philosophers, psychologists, neuroscientists to look at such questions of human behaviour which are going to be critical for the future.”

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