



Internship - R&D Department

Machine Learning, Computer Vision, Computer Graphics, Signal Processing

R&D engineer internship position available in 2023

Dynamixyz - A Take-two Interactive Technology Studio in Rennes, France

Who are we?

Dynamixyz is a technology software studio, specializing in the development of high-quality facial motion capture software for the entertainment industry (video games, movies, broadcast, VR). Its track-record includes high-profile games such as *Red Dead Redemption*, *Resident Evil*, *Watch Dogs*, *Assassin's Creed*, *NBA 2K*, as well as Marvel movies (*Thor*, *Avengers Endgame*) and Netflix shows (*Love, Death & Robots*). As a tech-oriented company, Dynamixyz has maintained a strong R&D activity, and has widely been praised as a leading technology provider since its inception in 2010. In July 2021, Dynamixyz joined *Take-Two Interactive*, a world leading video games production company based in New-York City. *Take-Two Interactive* is the holding company of world-renowned video games studios *Rockstar Games*, *2K Games* and *Private Division*. Within the *Take-Two* group, Dynamixyz focuses on developing state-of-the-art technologies and tools, enabling its studios to create outstanding animation for video game characters with unparalleled quality and efficiency.

Internship subject: Automatic audio-based tongue animation with machine learning

The last decade has seen the rise and advent of data-based facial animation. Priorly dominated by manual keyframing, the production of facial animation has since shifted to using advanced technologies such as motion capture, video-based markerless face capture, and automatic audio-based animation. The last few years have been particularly prolific in scientific and technical advances, in large part due to the emergence of deep learning as an overwhelmingly successful signal processing framework. Using those technologies has supported the production

of high-quality facial animation at scale for virtual characters in high-profile video games. Research and industry are continuing to push the boundaries to reach even better quality and efficiency. One crucial aspect missing from existing modern techniques is the animation of the tongue. The motion of the human tongue is a major visual cue in many languages for speaker comprehension yet has been largely overlooked so far in the pursuit of high-fidelity virtual characters. Encouraging recent progress in automatic generation of facial animation based on audio-based machine learning algorithms. In this internship, we wish to study, research and experiment with machine learning techniques that would provide realistic tongue animation for virtual characters automatically from audio speech signals.

Your internship mission within the company will include:

- **Designing, experimenting, and integrating algorithms** to fuel the company's technological development, and by extension the vision and ambition of its associated video games studios
- **Discussing and documenting results**, methods, APIs, and conclusions
- Reporting progress to other teams within the company and beyond to the rest of the group
- Monitor and study relevant developments in science and technology, both in academic research and the industry

We are looking for the following profile:

- **Engineering/Masters degree student**, specializing in computer vision, machine learning, computer graphics or image processing.
- **Spirit of curiosity, problem-solving**, open-mindedness and team-oriented mindset
- Knowledge of the **Python** programming language
- **Proficiency in French and English** required, both oral and written.

The following is a plus:

- Knowledge of **deep learning frameworks** (Pytorch, Tensorflow, JAX, ...)
- Knowledge of **collaborative software development tools** (Git, Cmake, CI/CD, testing)
- Notions of 3D virtual character animation techniques are a plus

How to apply?

- nicolas.stoiber@take2games.com
- If your application is selected, you will start the recruitment process with our Head of R&D Nicolas Stoiber