

Description	Required Knowledge/Skills
<p><b>Theme 1 (Framestore):</b> apply machine learning for photorealistic rendering: to solve light transport situations through highly scattering media, such as clouds and white fur, and efficient computation of specular-diffuse-specular paths. Working within the in-house renderer Freak, the researcher will prototype methodologies that use machine learning to provide progressive, controllable and temporally coherent acceleration of light transport across production datasets.</p>	<p>Skills: machine learning; GAN; rendering algorithms. Experience in machine learning, computer vision, computer generated graphics, photorealistic rendering, or fur and hair modelling.</p>
<p><b>Theme 2(Framestore):</b> learned resolution for photorealistic rendering: machine learning based solution to decouple sampling rate from final image resolution, and generate high quality, super resolution production content, within a significantly reduced computational footprint. Importance is placed on maintaining temporal coherency and a robust handling of a wide range of visual phenomena, such as hair, geometric details, motion blur and volumetric media.</p>	<p>Skills: machine learning; GAN; image <u>upsampling</u>. Experience in computer vision, computer generated graphics, machine learning, photorealistic rendering, or image processing.</p>
<p><b>Theme 3(Humain):</b> automatic facial modelling/rigging: create believable personalized <u>blendshapes</u> from one single image or scanned mesh; generate personalized production-level facial skin textures from a video or image sequence using deep learning algorithms; and automatically drive and animate a 3D target avatar by an actor's 2D facial video.</p>	<p>Skills: related deep learning <u>algorithms</u>; Experience in one of the following areas: facial recognition, facial landmark tracking, image/video processing;</p>