

Jens Fursund - Computer Graphics R&D

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Dr. Abildgaards Alle 13 4. tv, 1955 Frederiksberg C, Denmark • Tel: +45 61 79 33 34

PROFESSIONAL EXPERIENCE

2016–Present	<p>Pinscreen, Chief Technology Officer</p> <p>Technical lead of a 10 people team, doing research and development of a “3D avatar from a single photo”-service</p> <ul style="list-style-type: none">• Making lives easier for developers and researchers by shielding from “higher up” and easing their collaboration via DVCS, CI and CD.• Develop algorithm for generating a 3D avatar from a single photo, based on Computer Vision, Machine Learning and Computer Graphics• Implement AWS web-based services using Docker and node.js <p>Publication at SIGGRAPH Asia 16: <i>Pinscreen: 3D avatar from a single image</i>, Shunsuke Saito, Lingyu Wei, Jens Fursund, Liwen Hu, Chao Yang, Ronald Yu, Kyle Olszewski, Stephen Chen, Isabella Benavente, Yen-Chun Chen, Hao Li</p>
2013–2016	<p>PowerVR at Imagination Technologies, Lead Graphics Engineer</p> <p>Research and development of rendering techniques, focused on raytracing and global illumination.</p> <ul style="list-style-type: none">• Progressive lightmapper for the Unity Editor (released in Unity 5.6), in collaboration with Unity Technologies• Probe-based global illumination system for real-time rendering (implemented in Unity source)• Progressive lightmapper-based global illumination system for real-time rendering (implemented in Unity source)• Optimizing and implementing new rendering features for the Brazil renderer, including plugin development for Maya and 3dsMax <p>Talks: <i>GDC 2016</i>, So you want to build a lightmapper? <i>GDC 2015</i>, Low Overhead Probe-based Global Illumination Using Ray Tracing <i>Unite 2014</i>, Advanced Lighting Effects with Global Illumination <i>GDC 2014</i>, Global Illumination in Unity</p>
2012–2013	<p>Industrial Light & Magic, Research & Development Engineer</p> <p>Real-time rendering for on-stage virtual production</p> <ul style="list-style-type: none">• Physically based rendering, computation of mip’ed cubemaps, on to rendering• Tone-mapping <p>Pacific Rim - Film production research & development</p> <ul style="list-style-type: none">• Optimised the volume rendering shaders for Arnold resulting in 10x performance improvement• Various other optimizations

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2011–2012

Computer Graphics Lab - Alexandra Inst., Research Scientist

Extensive development and research related to the in-house CUDA/OpenCL-based ray-tracer

- Photon mapping (specifically stochastic progressive photon mapping)
- Photon splatting
- Photon mapped volume rendering
- Multiphase fluid rendering
- Different acceleration structures (e.g. HLBVH).
- Parallel primitives

Research and development effort into implementing a keyframe-based animation framework

- From the ground up implementation of blend-tree based skeleton keyframe animation framework
- GPU-based skinning
- Applying Kinect skeleton data to model and blending with imported animation

Publication at SCA12: *Multiphase Flow of Immiscible Fluids on Unstructured Moving Meshes*, Marek. K. Misztal, Kenny Erleben, Adam Bargteil, Jens Fursund, Brian Bunch Christensen, J. Andreas. Baerentzen and Robert Bridson

2007–2011

Unity Technologies, Part-time Developer

Employee number seven at Unity Technologies while the company grew to close to 70 employees.

- Record-playback based regression testing framework for the Unity game engine
- Client-server architecture for storing screenshots, logs, audio, performance data
- GUI design and programming for customer facing tools
- Stack-trace analysis tool
- General debugging and fixing of bugs from aesthetic GUI problems to odd physics behaviour

EDUCATION

2008–2010

Master of Science and Technology – Digital Media Engineering

Technical University of Denmark.

Courses attended in the fields of:

- Real-time rendering
- Off-line rendering
- Geometry processing
- Agile project management

2005–2008

Bachelor of Science and Technology – Medialogy

Aalborg University.

Courses attended in the fields of:

- Interaction design and development
- Image processing
- Games development
- Project management

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TECHNICAL COMPETENCIES

Computer Graphics

Researching and developing computer graphics pipelines, tools and effects for off-line and interactive applications, with a strong focus on efficiency, applicability and performance. Extraction of relevant parts of complex algorithms to enable actual implementation and application. These are some of the fields I have experience with:

- Global illumination and light transport
- Raytracing and acceleration structures
- Computer vision and image processing
- Animation
- Machine learning
- Physics simulation
- Fluid dynamics
- Computational geometry

Programming

Designing and implementing solutions through usage of object-oriented programming and agile development methods. Programming languages (in order of experience):

- C / C++
- CUDA
- OpenCL
- GLSL
- Python
- C#

Software Packages

Renderers:

- Custom in-house offline/real-time renderers
- Arnold
- Unity

Digital content creation tools:

- Maya
- Katana
- Zeno (in-house at Industrial Light and Magic)
- Blender

Languages

- Danish – native
- English – written and spoken fluently
- Spanish – understood and partially spoken
- Communication in Swedish and German