OFFER
- Physically-based image synthesis, including light transport simulation and appearance modeling.
- Monte Carlo methods for the solution of transport problems, such as radiative or neutron transport.
- Colour science.
- Colour calibration and colour management.
- 3D printing and appearance fabrication.

EXPERTISE
- Physically-based photo-realistic and predictive rendering.
- Light transport simulation.
- General transport theory including radiative and neutron transport.
- Physics-based modeling of material appearance.
- 3D printing and appearance fabrication.
- Segmentation and visualisation of medical volume data.
- Correspondence problems in triangle meshes and volume data.
PARTNERSHIPS AND COLLABORATIONS

ACADEMIC PARTNERS

- University College London, IST Austria, Max Planck Institut Informatik: collaboration on high-fidelity appearance reproduction in 3D printing.
- Faculty of Science, Charles University: collaboration on research in anthropology, biomedicine and forensic science. Results obtained with our software have been published in high-impact journals.
- Na Homolce Hospital: collaboration with Department of radiology on research in medical image segmentation and diagnostic imaging, especially on CT and MRI.

INDUSTRY PARTNERS

- Weta Digital: research collaboration and technology transfer on multiple topics in the area of physically-based photo realistic rendering for visual effects in movies. Our contributions have been used in Hollywood blockbusters such as The Hobbit and Dawn of The Planet of the Apes.
- Render Legion (Corona Renderer) and Chaos Group (V-ray): collaborative research and technology transfer aimed at the development of the physically-based Corona and V-ray renderers, with focus on architectural and product visualisation.
- Disney Research Zurich (DRZ): collaborative research on Monte Carlo methods for realistic rendering of optically participating media such as smoke, clouds, joice, skin etc.
- PIXAR Animation Studios: technology transfer of the research results developed together with DRZ into the industry-standard rendering software developed by Pixar, Photorealistic RenderMan.

KEY RESEARCH EQUIPMENT

We possess efficient software implementations of some of the most advanced light transport simulation algorithms that are known today.
- Our graphics software is also capable of simulating of physical effects that are still uncommon in mainstream software, such as light polarisation and fluorescence.
- We have developed a 3D printing driver for PolyJetting printers, capable of accurate color and texture reproduction.
- Furthermore, we maintain the Morphome3cs codebase, a unified software for biomedical research that features tools for surface data acquisition, statistical shape analysis and result presentation.

MAIN RECENT PROJECTS

- CGI-for-Film: Controllable global illumination for film production, 2008–2011, EU FP7 (Marie Curie IOF 221716).

SEE OUR WEBPAGE
www.cgg.mff.cuni.cz

transfer@mff.cuni.cz