

PFWE 2016-05-09

Julian Myrcha

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Organisation

- ▶ Faculty of Electronics and Information Technology (WEiTI - Wydział Elektroniki i Technik Informatycznych)
 - ▶ Has **Institute of Computer Science**
 - ▶ Has **Division of Computer Graphics** - CGL (Computer Graphics Laboratory) - grafi.ii.pw.edu.pl

Number of students graduated in **Institute of Computer Science**:

Year	2009	2010	2011	2012	2013
Bsc Degree	79	98	87	115	83
Msc Degree	83	69	81	80	78

- ▶ From that number every year there are varying number of diplomas whose topic are focused in Computer Graphics
- ▶ Every year, in **May** and in **December** students are choosing their future diploma topics from the presented list

Division of Computer Graphics

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CS2

International
Cooperation

Some Student
thesis

Staff

Division of Computer Graphics has been established in 1990
It contains about 20 teachers/researchers

Main focus of interest

- ▶ Modeling and rendering
- ▶ Color in computer graphics
- ▶ Modeling of natural phenomena and objects
- ▶ Real time image generation and processing (algorithms, hardware and software)
- ▶ Virtual reality systems
- ▶ last but not least.... Data Visualisation

In-site equipment Virtual reality lab (CS2) (1)

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1. System „**motion-capture**”
 - ▶ System OptiTrack Motive Body
 - ▶ 8 x cameras Flex 13 (1280x1024, 30-125 fps)
2. System „**greenbox**”
 - ▶ 2 x cameras Sony P×W 160
 - ▶ Mixer video Blackmagic ATEM Television Studio
 - ▶ Blackmagic DeckLink Studio 4K Capture & Playback Card
 - ▶ VTW-350HS - HD/SD character generator
 - ▶ video editing software - Sony Vegas Pro
3. System **audio to system** „**greenbox**”
 - ▶ Mixer audio Soundcraft Expression 1
 - ▶ Microphones - Sennheiser Ew-112p (wireless), Sennheiser Ew-135(wireless), Sennheiser E835S (wire)
 - ▶ digital audio editing software - Sony SoundForge 11

In-site equipment Virtual reality lab (CS2) (2)

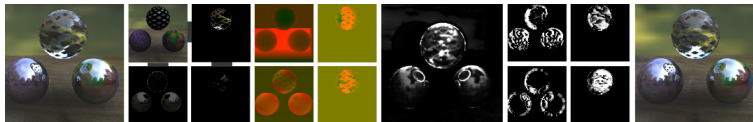
1. System **Biofeedback** – Elmiko ELM-DTBFP5
2. Drone – Spreading Wings S900
(S900+A2+GoPro4+Gimbal+Futuba14SG+LightBridge)
3. System transmission HDMI - Gefen EXT-WHD-1080P-L
4. System **Oculus Rift DK2 + Leap Motion Controller**
5. Xbox One console and Xbox 360 console
6. System to AR – tablets (Android) with a keyboard
ASUS Tranformers TF701
7. System to AR – tablets (MS Windows) with a keyboard
Lenovo Helix
8. Adobe Master Collection CS6

International cooperation

For example in the area of stereoscopic visualisation is an article published in [Eurographics 2014](#)

"Manipulating refractive and reflective binocular disparity" done by cooperation of authors from:

- ▶ Warsaw University of Technology
- ▶ Max Planck Institut Informatik (MPI Informatik)
- ▶ Saarland University
- ▶ MIT Computer Science and Artificial Intelligence Laboratory (MIT CSAIL)



Ł. Dąbała P. Kellnhofer T. Ritschel P. Didyk K. Templin K. Myszkowski P. Rokita H.-P. Seidel

Some of finished BSc in computer science: (1)

Examples of finished computer engineer diplomas:

- ▶ Visualization of particle systems in natural phenomena in real time (2009)
- ▶ Visualization of snow precipitation (2009)
- ▶ The use of programmable graphics cards for direct visualization of volumetric method based on ray-casting (2009)
- ▶ Visualization of star polyhedra (2009)
- ▶ Visualization of the curved surface of the mirror. (2011)
- ▶ Visualization of the gas stream flowing over objects of different types. (2011)

Some of finished BSc in computer science: (2)

Examples of finished computer engineer diplomas:

- ▶ Modeling and visualization of cumulus clouds in real time (2011)
- ▶ Reconstruction and visualization of 3D objects based on point cloud.(2011)
- ▶ Visualization using the ray tracing method. (2012)
- ▶ The use of GPUs to accelerate the visualization using the ray tracing method. (2012)
- ▶ Use of spatial information to improve the visual quality of images in computer graphics. (2013)
- ▶ Visualization of the aurora borealis. (2013)

Some of finished MSc in computer science:

- ▶ Visualization algorithms atmospheric effects for the 2D game engine (2013)
- ▶ The use of parallel computing in an efficient data mining algorithms on the example of frequent itemsets search (2013)
- ▶ Discovery of frequent itemsets in dynamic data streams (2012)
- ▶ Simulation of some quantum algorithms in QCL (2012)
- ▶ Modeling of surface phenomena in liquid simulations (2012)
- ▶ Visualization of volumetric data using GPGPU (2011)

Peoples involved in Alice cooperation

Currently,

prof. Przemysław Rokita - Head of Computer Graphics
Laboratory

Julian Myrcha - Senior Lecturer

As needed additional persons from Computer Graphics
Laboratory may start cooperation:

Assistant Professors - up to total 8

Senior Lecturers - up to total 10

Each of the mentioned above persons are responsible for
several graduated students.

Starting from the next Thesis assignments (May-June 2014)
it is possible to assign new students to subjects related to
the visualisation

Geometry import

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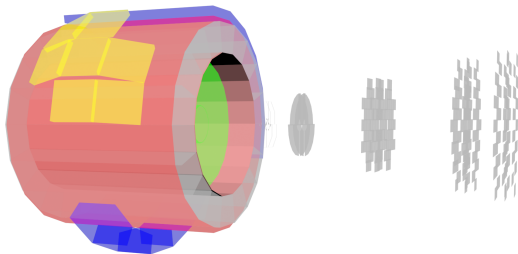
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Students

- ▶ (msc) **Jarosław Bronisz** - Graphics engine using DirectX 12 - (pl: Wykorzystanie możliwości DirectX 12 do budowy silnika graficznego (mgr, finish September, too late?))
- ▶ (eng) **Łukasz Burzyński** - Browser games implementation using asm.js framework (pl: Implementacja gry na przeglądarkę w technologii asm.js)
- ▶ (msc) **Michał Herman** - Using web frameworks to create games in scientific visualization (pl: Wykorzystanie frameworków do tworzenia gier w wizualizacjach naukowych)

Prace (istniejące)

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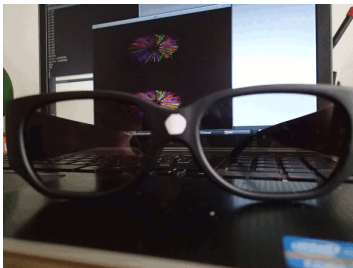
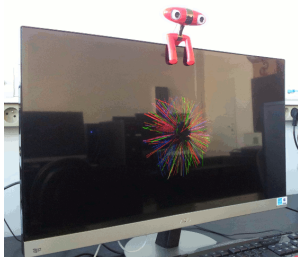
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Current involvement

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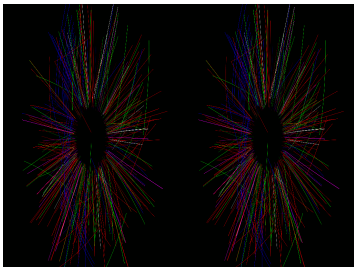
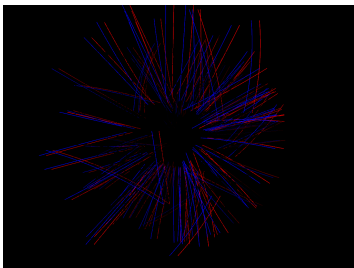
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Current ongoing involvement

- ▶ - parsowanie i filtrowanie danych modelu w formacie collada
- ▶ - próby z Oculus pod Linuksem (na razie bez powodzenia) - pod Windows jest SDK a pod Linuksa próbujemy coś zasymulować
- ▶ - Próby wyświetlania na wielu ekranach (i łączenie ze stereowizją)