

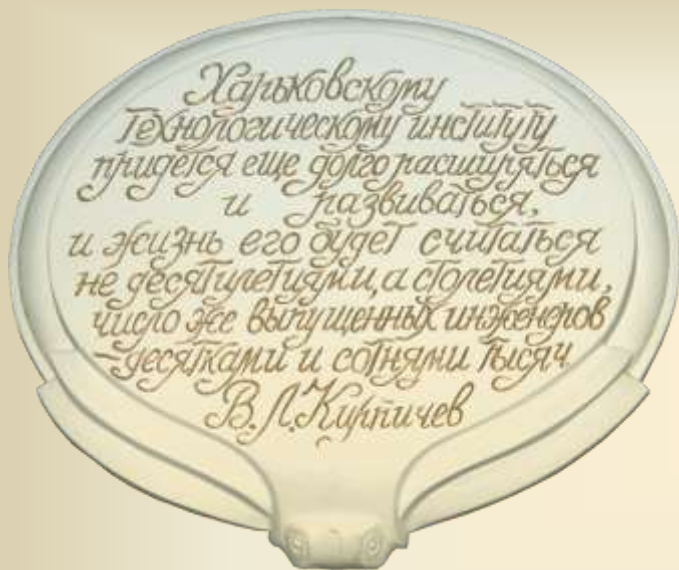


National Technical University  
«Kharkiv Polytechnic Institute»



Institute of Education and Science  
in Engineering and Physics

Department of geometric modeling and computer graphics



«The Kharkov Institute of Technology will need to continue to grow for a very long time. Its life will not be measured in decades, but in centuries ... and the number of engineers it graduates will not be in the tens of thousands, but in the hundreds of thousands».

V.L.Kirpichev



# EDUCATION FOCUS

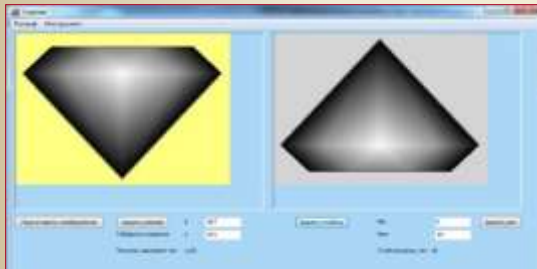
Development of software  
for various purposes

Geometric modeling of  
objects, phenomena and  
processes

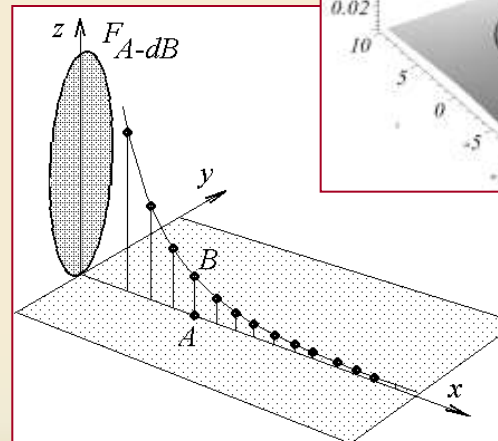
Elaboration of computer  
games components

Development of a software add-on to  
create a control code,  
which is used by the CNC system

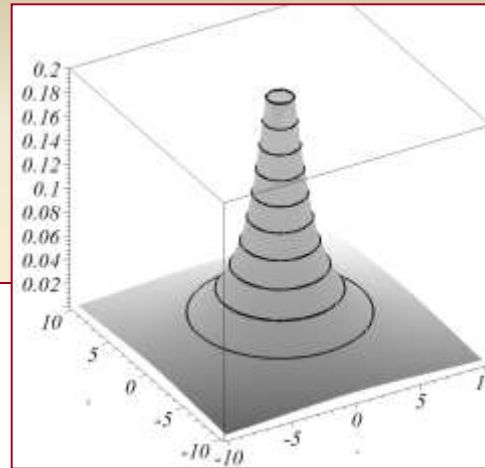
Image processing



Finished part



Modeling of heat transfer by radiation  
with the calculation of the forms of factors

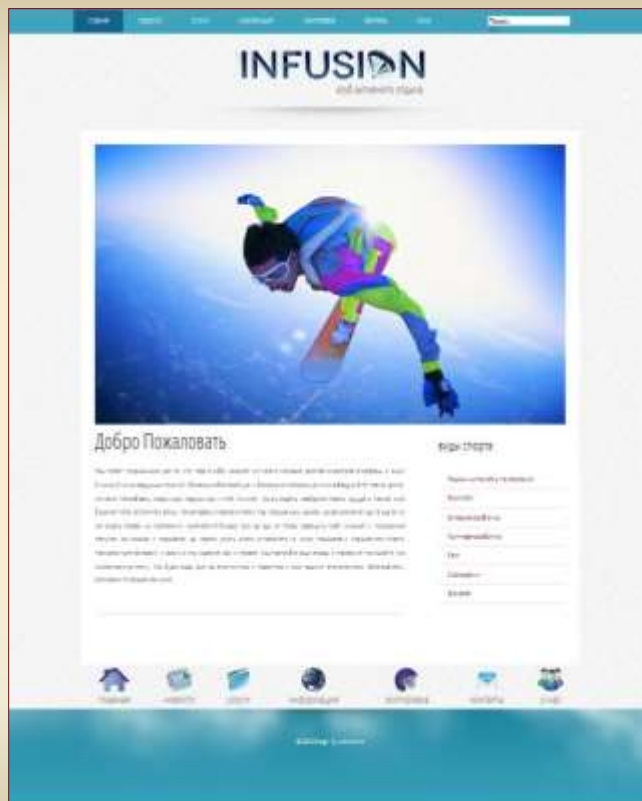


**Visualization of  
architectural and  
construction projects**

**Formation of engineering  
constructions parts and  
assemblies**

**Development  
of WEB-sites**

**Creation of form style of  
enterprises and  
organizations**



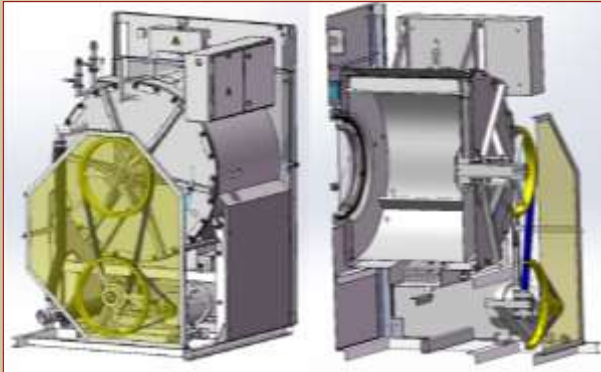


## PROSPECTS OF EMPLOYMENT

## Machine-building enterprises

**Developers  
of software  
for various purposes**

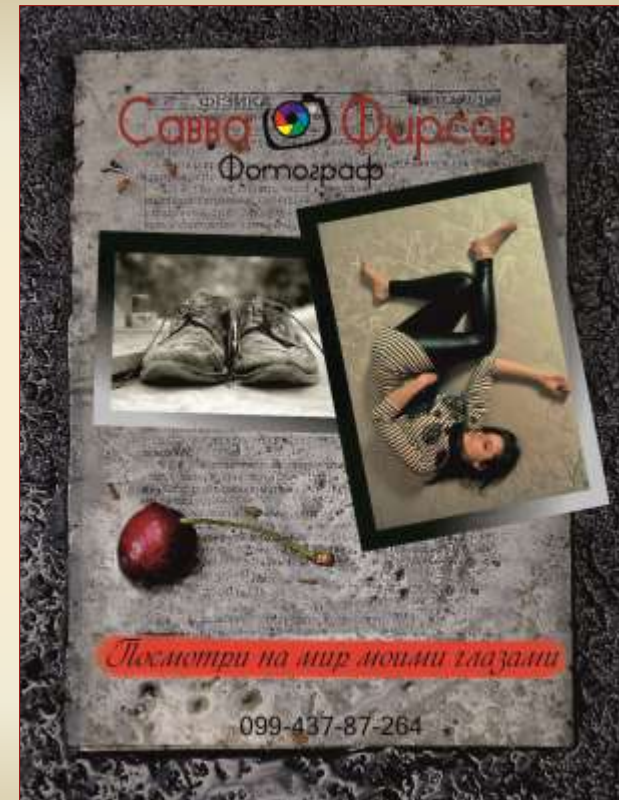
## Computer game developers

[illegible]

## WEB - office

## Construction companies and architectural offices

## Advertising agencies



# The main educational disciplines of the educational program of the Level I: Bachelor's Degree could help to study:

Basics of graphic composition

Vector and raster graphics

3D modeling



Creative work  
in vector graphics



Learning the basics of composition



Modeling of the character for computer game



Processing of artistic  
images

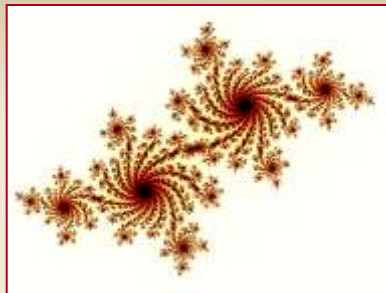


Creating and editing a bitmap





## Geometric modeling in computer graphics



The result of the individual task  
about fractal graphics visualization

## Graphic design systems



Design document  
and 3D model of detail

## WEB programming



The fragment of application part  
of course project

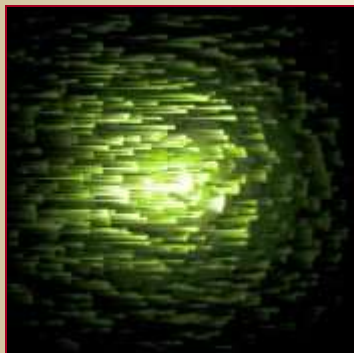


**The main educational disciplines of the educational program of the  
Level II: Master's Degree in specialization  
"Geometric modeling and graphic information technologies"  
could help to study:**

**Simulation of special effects  
in computer graphics**

**Technologies for recognizing geometric  
images and computer vision**

**Examples of course projects**



**Image transformation  
in shades of gray**



**The result of  
Sobel's work**



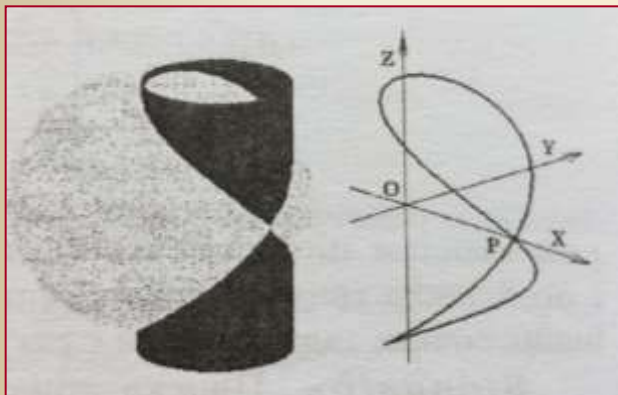
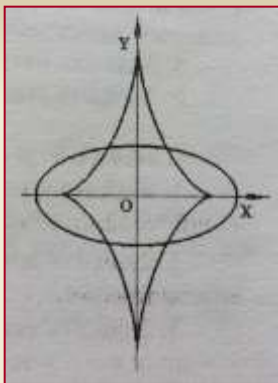
**feature extraction (histogram  
of oriented gradients)**





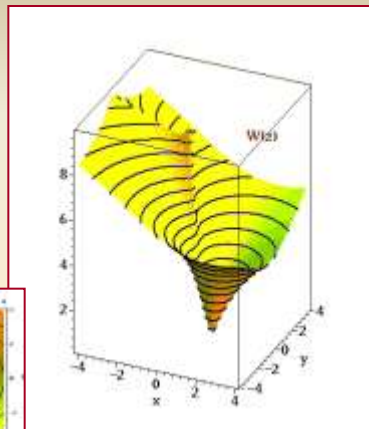
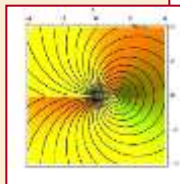
## Methodology of scientific research

Graphical results of solving problems on the theme of "theory of curves"

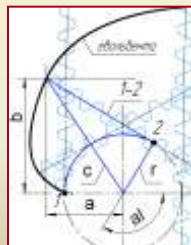


## Geometric modeling of objects, phenomena and processes

Graphical representation of physical fields models



Modeling of dynamic objects



## Programming of graphic systems

The interface of the course work : determination of the sea borders from the satellite

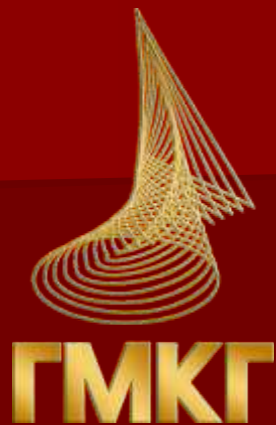


The histogram of the distribution of parameters



The Department of Geometric Modeling and Computer Graphics occupies the 6th floor of the high-rise educational building U1. It has 8 training venues, an array of training models and engineering units, and a training room well equipped with computers. Classes are held with multimedia assistance. Students often receive top places in competitions of student scientific works or olympiads of academic subjects. They also present papers at various scientific conferences, and participate in a wide range of research and educational projects.





**At the Department of Geometric Modeling and Computer Graphics highly qualified professors and associate professors – including 2 doctors of technical sciences and 16 candidates of technical sciences – are engaged in professional activities.**

**After receiving a master's degree, those wishing may continue in educational programs of the Level III of higher education in order to attain a Ph.D.**

**The main emphasis of the scientific activity of the department:**

- **Problems relating to objects formation and visualization of their geometric models;**
- **Problems relating to geometric modeling of complex dynamic systems;**
- **Problems relating to gear quality and durability;**
- **Problems relating to the recognition of geometric images, technologies animation and rendering;**
- **Development of virtual products based on the creation of two-dimensional and three-dimensional models.**



**The head of the department:  
PhD Olga Shoman, Prof.**







## Contacts

NTU "KhPI"  
2, Kyrpychova str.,  
61002, Kharkiv,  
Ukraine

Department of  
Geometrical Modeling  
and Computer  
Graphics

Tel. +38 057 707 65 75

Shoman Olga  
(head of department)

Email: [olgasho@ukr.net](mailto:olgasho@ukr.net),  
[kgmkg.ntu.khpi@gmail.com](mailto:kgmkg.ntu.khpi@gmail.com)

