

**МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ  
СУМСЬКИЙ ДЕРЖАВНИЙ УНІВЕРСИТЕТ  
КАФЕДРА ІНОЗЕМНИХ МОВ  
ЛІНГВІСТИЧНИЙ НАВЧАЛЬНО-МЕТОДИЧНИЙ  
ЦЕНТР**

**МАТЕРІАЛИ  
Х ВСЕУКРАЇНСЬКОЇ НАУКОВО-ПРАКТИЧНОЇ  
КОНФЕРЕНЦІЇ СТУДЕНТІВ, АСПІРАНТІВ ТА  
ВИКЛАДАЧІВ  
ЛІНГВІСТИЧНОГО НАВЧАЛЬНО-МЕТОДИЧНОГО  
ЦЕНТРУ КАФЕДРИ ІНОЗЕМНИХ МОВ**

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## HOW 3D WITHOUT GLASSES WORK

*T. Lopatchenko, Sumy State University, group IT – 32*

*S.G. Zolotova – E L Adviser*

The technology of 3D without glasses is called autostereoscopy. Because this kind of three dimensional technology doesn't utilize special spectacles or headgear it became also known as glasses-less 3D or glasses free 3D. The methods of 3D technology without glasses include a parallax barrier, volumetric and holographic techniques.

The method of parallax barrier is widely used in modern 3D liquid crystal displays. Parallax barrier is a special device with a series of precision slits that's placed in front of LCD, serving as a filter for output image perception. However, the parallax method is not perfect, because it has some disadvantages. The first one is that in order to experience stereoscopic 3D effect the viewer must be positioned at a certain angle to the display.

Another type of autostereoscopic 3D is a volumetric display. This method relates to the construction of three dimensional images by means of various physical mechanisms. Volumetric displays use light fields to reconstruct 3D object in the volume of space. The created 3D images are thus measured in voxels (volumetric pixels) and can be seen with the unaided eye. A good example of volumetric imaging devices are 3D displays used for tomography.

The method of holography is based on reconstructing 3D objects using light recording. A hologram is created when an interference of several electromagnetic waves with equal frequencies occurs. The spreading of holographic 3D displays is wide in the artistic field, usually this process is combined with music and computer graphics.