



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

МАТЕРІАЛИ

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

«TO MAKE THE WORLD SMARTER AND SAFER»

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(вул. Римського-Корсакова, 2, м. Суми, Сумська обл., 40007)

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The plane encoder corrects only one-time errors. As for errors of different multiplicity, it can only detect them. Malfunction signals are analyzed for their frequency of receipt and subsequent selection of the transmission mode.

The analysis showed that the use of plane code is optimal for transmitting information with the high speed and the high level of protection against errors.

A USAGE OF GRID-TECHNOLOGY FOR MODELING PHYSICAL PHENOMENA IN MODERN SCIENCE

M. Kharchenko – Sumy State University, group PM – 91
S.V. Podolkova – EL Adviser

It is well known that modern scientific problems are very complicated and can not be solved by pen and paper without computers. The main reason for usage computer resources is a lot of equations need to be solved and huge amount of data need to be used for corresponding computations.

Nowadays scientists use HPC clusters (high-performance computing cluster) for solving their complicated scientific problems instead of low productive PC (personal computer). HPC clusters consist of several computation nodes connected in one cluster through fast local area networks. Each node is a specialized HPC computer with extended memory and consists of several high performance processors operating in parallel manner. A computer cluster may be a simple two-node system which just connects two personal computers. It may be a very fast supercomputer. A basic approach to building a cluster is that of a Beowulf cluster which may be built with a few personal computers to produce a cost-effective alternative to traditional high performance computing.

Computer clusters may be built for different purposes. A general purpose for business needs web-service support, a purpose for simulations of physical phenomena is in computation-intensive scientific calculations. In case of extremely complicated problems

when user should operates with huge amount of data the solutions of corresponding scientific problems can be done by using parallel or grid-computations. This procedure is based on a usage of grid-cluster like one supercomputer. This supercomputer is composed of different HPC-clusters connected with each other through Internet. In this case we get supercomputer which consists of a lot of big volume of memory and big set of high performance computers. The parts of grid-cluster are located around the world in one or different countries and are independent on each other. They are only connected through a network. This technology is used to calculation of the difficult tasks requiring significantly computation resources. The reason to create this procedure for computation process was emerged when the biggest laboratories of scientific research (CERN in Switzerland, ORNL in the USA) were out of needed computation memory and resources.

Nowadays each scientific institute or University has its own HPC clusters to perform numerical modeling of physical and chemical processes. Every country with developed scientific power has one or several grid clusters. In Ukraine the most of academic institutes connect their HPC clusters into National Ukrainian Grid supported by National Academy of Science of Ukraine. For example, in Institute of Applied Physics located in Sumy city the HPC cluster is connected into Ukrainian National Grid network. This cluster is used by scientists of this Institute and scientists from other institutes in Ukraine and other countries over the world.

BIOFUTURE

A. Kravchenko – Sumy State University, group IN – 92

I. A. Morozova – El Adviser

Today I would like to tell you about magnificent invention with a huge potential humanity came up with recently. The team of scientists from University of Vermont, Tufts and Harvard University have constructed a first-ever robot entirely out of living