

Datasheet of the IKTA4/102 project

I. Advisory system for medical diagnosis using images

Project start: January 1, 2002, duration: 35 months.

Amount of support: KHUF 60 000, total project cost: KHUF 137 685.

Project leader: **Puskás Zsolt Péter**

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Project URL: <>

II. Consortium members (number of members = 3, the first member is the project co-ordinator)

no	name	support	total cost
1.	Budapest University of Technology and Economics, Dept. of Measurement and Information Systems	KHUF 19 600	KHUF 49 980
2.	Kopint-Datorg Economic Research, Marketing and Computing Limited	KHUF 26 550	KHUF 48 185
3.	Semmelweis University, 2nd Institute of Pathology	KHUF 13 850	KHUF 39 520

III. Public presentations

No presentation is available.

IV. Goals of the project

The objective of the project is the development of a decision support system for medical application which is capable of analysing great volumes of X-ray pictures, detecting and identifying certain patterns in the X-ray pictures, and supporting the assessment of a wide range of medical screen tests. The project aims at the support of breast cancer screen tests with the emphasis on prevention. The assessment of mammography screen tests requires considerable human resources. The in-depth mammography screen tests in Hungary require the production of approx. 4x500,000 pictures annually, out of which the tests susceptible of positive results account for approx. 30000-60000 cases; therefore it is difficult to provide the human resources for the assessment of cases of this volume. A system that can safely filter at least 50 percent of the negative results can exempt the specialists from the requirement of analysing one million pictures. A financial analysis in 1998 showed that the wage cost per screen tests is HUF 1175 each, about half of which is the specialist's wages. This means that the wage costs can be measured in billions of HUF. The development of a diagnostic decision support system which is based on picture analysis is certainly desirable and required in terms of professional, economic and social expedience.

The objective of this application is the development of new procedures using the methods of artificial intelligence and machine learning, and with the application of these procedures the development of a hybrid diagnostic decision support system. The work in the project is based on the achievements of the Hungarian and foreign research work and the medical and diagnostic experience related to the Hungarian cancer screen tests. The work will use the latest procedures of image and information processing including numeric and symbolic methods of image processing as well as neural networks and expert systems. The project is primarily based on the opportunities of the existing equipment in the medical institutes, i.e. the objective is the analysis of traditional X-ray pictures (films). The test/development phase of the work will require the production and analysis of pictures made in special planes in addition to the traditional X-ray pictures. The standardised scanned pictures made of the X-ray pictures are computer processed. The planned solution is a software system to perform the analysis and classification of the scanned pictures.

V. Project results (in case of finished projects)

The project is not finished.

VI. Data on consortium members (number of members = 3)

1. *Budapest University of Technology and Economics, Dept. of Measurement and Information Systems* (co-ordinator)

URL: <<http://www.mit.bme.hu/~horvath>>

Support for the co-ordinator: KHUF 19 600, and its total cost: KHUF 49 980.

Contract number: .

Team leader: **Horváth Gábor Dr.**

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2. *Kopint-Datorg Economic Research, Marketing and Computing Limited*

URL: <>

Support for the consortium member: KHUF 26 550, and its total cost: KHUF 48 185.

Contract number: .

Team leader: **Váriné Reményi Gabriella**

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3. *Semmelweis University, 2nd Institute of Pathology*

URL: <<http://www.sote.hu>>

Support for the consortium member: KHUF 13 850, and its total cost: KHUF 39 520.

Contract number: .

Team leader: **Illyés György**

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