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## New computer program allows early diagnosis of Alzheimer's disease

11. June 2010 06:47

Researchers of the University of Granada have developed a new computer program that allows early diagnosis of [Alzheimer's disease](#) through processed images. This new system has enhanced successful early diagnosis of [Alzheimer's disease](#) up to 90%, which is an important progress within this area of study.

The study was conducted by professor **Ignacio Alvarez Ill-n**, a member of SIPBA (Signal Processing and Biomedical Applications) TIC-010 of the University of Granada, and supervised by professors **Juan Manuel G-rriz S-ez**, **Javier Ramirez P-rez de Inestrosa** and **Carlos Garc-a Puntonet**.

Scientists of the University of Granada have validated some new techniques for diagnosing [Alzheimer's disease](#) through a series of processed images. These techniques were successfully tested, and promising results were obtained. This study is part of a wider project --still under development- which purpose is developing a complete software for clinical use in hospitals. It is being developed in cooperation with the companies PET-Cartuja and PTEC, and it belongs to the prizewinning project PETRI-DENCLASES, which was rewarded at the III Premios Andaluc-a Sociedad de la Informaci-n 2010 edition, a prize awarded by the Andalusian Regional Government to companies contributing to an enhanced information society.

The research group has cooperated with the international project ADNI ([Alzheimer's Disease NeuroImaging Initiative](#)), which confers an international character to the study, and has enabled the use of one of the largest database in the world concerning [Alzheimer's disease](#).

### Tomograms

To test this new automated computer-assisted diagnosis, the researchers of the University of Granada used SPECT and PET tomographies from three different databases. The first database contains 97 de-identified SPECT images which were labeled by experts and provided by Dr. Manuel G-mez-R-o and the Department of Nuclear Medicine, university hospital Virgen de las Nieves, Granada, Spain. The second database contains 60 PET images provided by the company PET- Cartuja (Seville). The third was the largest database, and it had 219 PET images provided by ADNI (United States).

These databases included [brain](#) CT scans from aged patients suffering from [Alzheimer's disease](#) or with normal development patterns. A series of algorithms were developed, which allowed the identification of [brain](#) areas affected by the disease, and helped in distinguishing diseased patients from healthy ones.

The three methods presented in this study attained 90% success rate in identifying Alzheimer through CT -both PET and SPECT. At present, a computer software is being developed jointly with the company PTEC (Malaga) to translate these results into a software that can be used in hospitals. Thus, neurologists will have a tool as precise as a team of experts.

These results were partially published in the journals *Information Sciences* (2010), *Neuroscience Letters* (2009) and *Electronics Letters* (2009).

Source: [University of Granada](#)

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