FROM SENSOR-SPACE TO SOURCE-SPACE: NEW METHODS FOR DIAGNOSIS OF ALZHEIMER’S DISEASE

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MSc RESEARCH PROJECT

ALZHEIMER’S DISEASE

Number of people with dementia (Millions)

NEED OF AN EARLY, COST-EFFECTIVE AND NON-INVASIVE SOLUTION FOR ALZHEIMER DIAGNOSIS

EEG/MEG Solutions

SOURCE LOCALIZATION

STANDARIZED LOW RESOLUTION BRAIN ELECTROMAGNETIC TOMOGRAPHY (SLORETA)

An early diagnosis allows us to apply different types of treatment

PHARMACOLOGICAL
• Symptomatic treatments
• Disease modifiers treatments
• Epidemiological treatments

NON-PHARMACOLOGICAL
• Musicology
• Snoezelen Rooms
• Caregiver programs
• Diet

- 19 CHANNELS
- CONTROLS, MCI PATIENTS AND AD PATIENTS
- RESTING STATE – EYES CLOSED RECORDINGS
- LOW SPATIAL RESOLUTION
- SOURCES ARE NOT DIRECTLY UNDERNEATH ELECTRODES
- A SOLUTION TO THE INVERSE PROBLEM IS NEEDED
- 6239 VOXELS
- LINEAL AND MAXIMALLY SMOOTHED AT SOURCE SPACE WITH 7MM RESOLUTION
- 3D DISTRIBUTION OF THE CORTICAL SOURCES
- 3 SHELL SPHERICAL HEAD MODEL: SCALP, SKULL AND BRAIN