

# METU, DEPARTMENT OF COMPUTER ENGINEERING

## GRADUATION PROJECT IDEA PROPOSAL

### PROJECT TITLE

Visualization of the human cognition using brain data

**PRIVACY** (Private or Public):public

Can this project idea be placed in a general pool from where any project group can pick? yes

Or, is this an idea that the proposing group (or affiliated company) would like to keep private for just their team? no

Important Note: If the project idea might contain a patentable idea or any type of intellectual property, please first make sure to take appropriate steps (apply for a patent, etc.) before sending your idea to us.

### PROJECT DEFINITION

**Definition:** *Project involves visualization of the fmri data in space-time. 3-d animations will be done for visualizing the cognitive processes in the brain.*

**Purpose of the Project:** The system receives the fmri data as input, convert these scanned data to brain regions and analyze this regions.

**Project Type:** *Academic*

**Significance of the project:** The human brain is a complex system which is topologically represented as structural and functional connectomes<sup>1</sup>. Mapping the human brain connectome and uncovering its underlying organizational principles are fundamentally important in neuroanatomy, neurodevelopment, cognitive neuroscience and neuropsychology. Recent studies have suggested that the human brain connectome can be mapped using neuroimaging data and further characterized through sophisticated analytic strategies based on graph theory[1]. Our goal is to display some of the brain functions

This study will fill in a module in a TUBİTAK project

Depending on the type of the project you decide to carry out, give detailed information on the following issues.

- Targeted User Profile: *neuroscientist*
- Similar Products/Projects: *none*
- Innovative Aspect: *3-d representation of the cognitive processes is not done before*
- Contributions: *a new tool for analysis of brain functions*

PROPOSER INFO (Student Group, Company, Faculty).

Fatos Yarman Vural

Name of the Person/Name and Members of the Team/Name of the Organization:

Contact Info: *Please provide contact information of a person or a team who may provide more information on the project.*

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Resources to be Provided (and to how many project groups at most) (by the sponsor):

*2 groups at most*

PROJECT DEVELOPMENT ENVIRONMENT.

Programming Languages and Technologies: Unix,c++

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Required Hardware and Software: *List required hardware and software for your project.*