Format

Functional imaging of the brain network activity supporting visual recognition and memory

Project Leader
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1. Objective
This project is aimed at:
Understanding the brain mechanisms underlying our cognitive functions is one of the ultimate goals of scientific research. In my laboratory, and in collaboration with laboratories outside KUT, we are studying the neural basis for cognitive functions using functional magnetic resonance imaging (fMRI), behavioral performance measures, molecular biology, and electrophysiology in humans and non-human primates (see References). In this specific project, we will be focusing on fMRI study in humans using a research-dedicated 3T MRI scanner located in our institute. We aim to measure relationships between fMRI activation and behaviors quantitatively by employing a variety of techniques including functional connectivity analysis and decoding of activated voxel patterns.

2. Project Outline
To that end, the project will consist of the following phases:
Successful candidates will be engaged in one or more following themes.
(a) Analyses of brain activation associated with visual awareness, based on signal detection theory.
(b) Brain mechanisms for long-term memory storage and retrieval.
(c) Development of a method to improve memory encoding performance by means of fMRI-based neurofeedback.

3. Expected Performance
In this project, the successful candidate would be expected to:
(a) develop the ability to conduct research independently.
(b) publish two or more research papers by the end of 3-year PhD course.
(c) work as a teaching or research assistant.

4. Required Skills and Knowledge
The successful candidate for this project will have the following knowledge and skills:
(a) Good communication and writing skills in English.
(b) Strong research background in neuroscience, or related areas.
(c) Familiarity with Matlab, statistical methods and programming skills is a plus.

References

1. Masamizu *et al*. Neuroscience. 2011; 193: 249-258.

2. Matsui *et al*. Nature Methods. 2007; 4: 161-168.

3. Nakahara *et al*. Trends Cogn Sci, 2007; 11: 84-92.

4. Nakahara *et al*. Science. 2002; 295: 1532-1536.

See our admission guidelines:

http://www.kochi-tech.ac.jp/kut_E/graduate/admission.html

Contact

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