Biomedical Image Processing of the Brain Disease (Va. D) and Psychological Analysis Using Physical and Computational Simulations
CHAE-EUN D LEE, WONJUNE CHO, HAYOUNG KYUNG, Choice Reseach Group — Medical technology plays an imperative role in physicians examination and diagnosis of patients. The development of MRI (Magnetic Resonance Imaging) has revolutionized the way we examine brain diseases, such as dementia. After Alzheimers disease, Vascular Dementia (Va. D) is the second most common type of dementia that affects the global population. This particular brain disease develops due to a restricted blood flow to the brain, causing patients to experience difficulty in various thought processes such as decision-making, judgment, memory, planning, and organizing. In order to guarantee the best possible examination of suspected Va. D patients, high quality MRI images of the brain are required. This paper studies the MRI image of the human brain affected with various stages of Va. D. Patients with a healthy brain, mild case of Va. D, and severe case of Va. D, will exhibit distinct images. Each stage affects the patients differentlya mild case of Va. D. showing symptoms of slower thought processes, difficulty concentrating, mood swings, etc. while a more progressed, severe case of Va. D. showing symptoms of delusions, loss of memory and motor skills, personality changes, etc. Such different in images will produce different k-spaces, generated by Fourier Transformation.

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