数理・情報のフロンティア
2019 年度採択研究代表者

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§1. 研究成果の概要

This year, the spread of the Covid and the emergent state has posed much negative impact on my research. Specifically, it is difficult to conduct the collaboration with doctors to collect the necessary data for the proposed system.

To alleviate the restriction on data, I have to shift the research to the more general vision and medical research to build a foundation for this project. In this year, I have conducted research on following four topics: 1. Artificial attention mechanism. 2. Gaze aided framework. 3. Limited data learning. 4. Medical related tasks.

This project involves an attention mechanism integrating the NLP and gaze information. This year, I was working on the attention of deep neuron network to interpret its decision and enhance the robustness against the adversarial a

【代表的な原著論文情報】

1) “Understanding adversarial attacks on deep learning based medical image analysis systems”, Pattern Recognition, vol110 , 2021

2) “Goal-Oriented Gaze Estimation for Zero-Shot Learning”, to be published in IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2021

3) “Feature Normalized Knowledge Distillation for Image Classification”, The European Conference on Computer Vision (ECCV) 2020

4) “Semi-Supervised Learning in Medical Images Through Graph-Embedded Random Forest”, Front Neuroinform., 2020 Vol 14, 2020

5) “Review of Deep Learning Approaches for the Segmentation of Multiple Sclerosis Lesions on Brain MRI”, Front Neuroinform., 2020