A Study for Optimizing Schedule based on Work Life Balance of Radiologist

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KEYWORDS

Schedule optimization, work life balance, work style reform

1 INTRODUCTION

Due to the recent reduction of working-age population in Japan, a working style reform is attracted great attention [1]. In working style reform, there are below three issues.

(1) Shortening long working hours
(2) Promoting diversity
(3) Raising wages and improving labor productivity

It is an important issue in Japan to expand employment opportunities and create a Working style reform environment in which workers can fully demonstrate their motivation and abilities by improving the information infrastructure of Society 5.0 [2].

However, in the medical field, doctors have difficulty in maintaining a work life balance due to overwork. In addition, the system software which integrally manages the scheduling considering the growth of the doctor has not been proposed yet.

In this paper, we propose a scheduling method based on the skills of doctors. In the optimization of our system model applying the proposed method, we need a lot of calculations. Therefore, we solve this problem using high-performance computing technology including parallel processing.

2 SYSTEM MODEL

We show the outline of our system model in Figure 1. Our research group proposes a system model that optimizes the total work balance to achieve the working style reform of doctors. First, based on the mathematical model [3] used in conventional system, we construct a system model for radiologists. By analyzing a doctor's work management record accumulated by hand as big data, we make an optimal schedule based on the balance of work life. We also construct a stress estimation model for doctors by machine learning and update the scheduling.

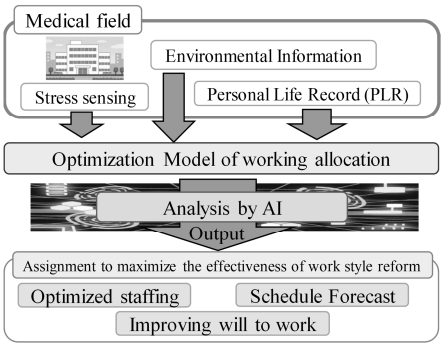

Figure 1: Outline of system model.

3 CONCLUSION

In this paper, we explained the outline of our system model that optimizes the total work balance to achieve the working style reform of doctors. Since the optimization of our system model requires a lot of calculations, we need to use high-performance computing technology including parallel processing.

In the future, we will evaluate the availability of our system model compared with conventional scheduling method.

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REFERENCES

[1] Working age population, The Japan Institute for Labour Policy and Training. https://www.jil.go.jp/kokunai/statistics/databook/2018/02/p058_t2-4.pdf.
[2] Society 5.0. https://www8.cao.go.jp/cstp/english/society5_0/.
[3] H. Yamada, K. Ohori, T. Iwao, A. Kira, N. Kamiyama, H. Yoshida, and H. Anai, "Modeling and Managing Airport Passenger Flow under Uncertainty: A Case of Fukuoka Airport in Japan," Proc. of 9th International Conference on Social Informatics (SocInfo), LNCS 10540, pp.419-430, 2017.