TKB213276

Biomedical Artificial Intelligence

Kecerdasan Buatan Biomedis

BASIC INFORMATION

Course Credit [sks]	3 / 100 minutes per Week
Course Type	Elective
Course Classification	Engineering Topics
Prerequisites	-

STUDENT AND LEARNING OUTCOMES

Covered Student Outcomes

Fundamental and Engineering Knowledge (a)	Modern Tools Utilization (e)
Development of Engineering Solution (b)	Engineering Design (c)

Learning Outcomes

LO1 Students are able to understand the basic of Artificial Intelligence.

[CPMK 1: Mahasiswa mampu memahami dasar kecerdasan buatan)

LO2 Students are able to understand the expert system: fuzzy systems and evolutionary systems).

[CPMK 2: Mahasiswa mampu memahami sistem pakar: sistem fuzzy dan evolutionary systems]

LO3 Students are able to implement search techniques in biomedical application.

[CPMK 3: Mahasiswa mampu mengimplementasikan teknik pencarian dalam penerapan biomedis]

LO4 Students are able to explain the current AI algorithms development in biomedical application.

[CPMK 4: Mahasiswa mampu menjelaskan perkembangan algoritma AI saat ini dalam penerapan biomedis]

COURSE DESCRIPTION

This course provides basic concept of AI, i.e., symbolic programming languages which are needed to represent knowledge, conclusions and finding solutions to a problem. Also, it discusses the components and structure of artificial intelligence systems and some basic techniques for knowledge representation and inference.

DESKRIPSI MATAKULIAH

(Matakuliah ini memberikan konsep dasar AI, yaitu bahasa pemrograman simbolik yang diperlukan untuk mewakili pengetahuan, kesimpulan dan menemukan solusi untuk suatu masalah. Juga membahas tentang komponen dan struktur sistem kecerdasan buatan dan beberapa teknik dasar untuk representasi dan inferensi pengetahuan, yang diterapkan pada bidang biomedis).

TOPICS

1. Preliminary (Pendahuluan)
2. Searching for exploring alternative solutions (Teknik Pencarian untuk mengeksplorasi solusi alternatif)
3. Search techniques Implementation in biomedical application (Implementasi Teknik Pencarian pada Penerapan Biomedis)
4. Expert systems (Sistem Pakar):

3.1. Fuzzy systems

3.2. Evolutionary systems

5. Machine Learning
6. Deep learning
7. Symbolic AI and Connectionist AI
8. AI in Biomedical Application (AI dalam Penerapan Biomedis)

REFERENCES

1. Russell, S. J., & Norvig, P., 2021, Artificial intelligence: A modern approach. Hoboken, NJ: Pearson.

2. Fuzzy System Modeling. 2000, Introduction to Fuzzy Sets, Fuzzy Logic, and Fuzzy Control Systems, 101-150. doi:10.1201/9781420039818-7

3. Zhou, J., Cui, G., Zhang, Z., Yang, C., Liu, Z., Wang, L., & Sun, M., 2018, Graph neural networks: A review of methods and applications. arXiv preprint arXiv:1812.08434.