

System Design

2 units (selection)

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Target This class introduces some representative methods for control system design and image recognition

Outline System design is a process in which scientific principles and engineering tools are used to produce a plan which satisfy a human need. In this lecture, the control system design methods such as modeling, equations of motion, modal analysis, observer and controller, and the image recognition methods such as neural network, support vector machine, mean shift and sparse template are explained.

Style Lecture

Keyword *modeling, equation of motion, vibration control, neural network, support vector machine, mean shift, sparse template*

Fundamental Lecture “**Digital Control Theory**”(1.0)

Relational Lecture “**Advanced Applied Dynamics of Machine**”(0.5)

Requirement Students are required to have a good understanding of undergraduate-level design engineering and automatic control theory.

Goal

1. To understand the modeling and control methods for mechanical systems.
2. To understand the image recognition methods for object detection

Schedule

1. Modeling
2. Equations of motion(1)
3. Equations of motion(2)
4. Modal analysis
5. Vibration control(1)
6. Vibration control(2)
7. Simulation
8. Intermediate examination
9. Basic image processing(1)
10. Basic image processing(2)
11. Basic image processing(3)
12. Image segmentation by mean shift
13. Object tracking by sparse template
14. Object detection by neural network

15. Object detection by HOG and SVM

16. Final examination

Evaluation Criteria Evaluate based on two examinations and reports

Textbook To be introduced in the class.

Reference To be introduced in the class.

Contents <http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216683>

Student 開講コース学生のみ受講可能

Contact

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