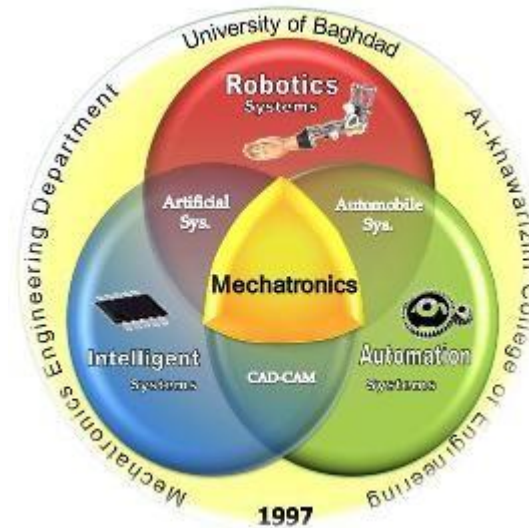


Calculus II

2024

Lecture 1: Course Introduction

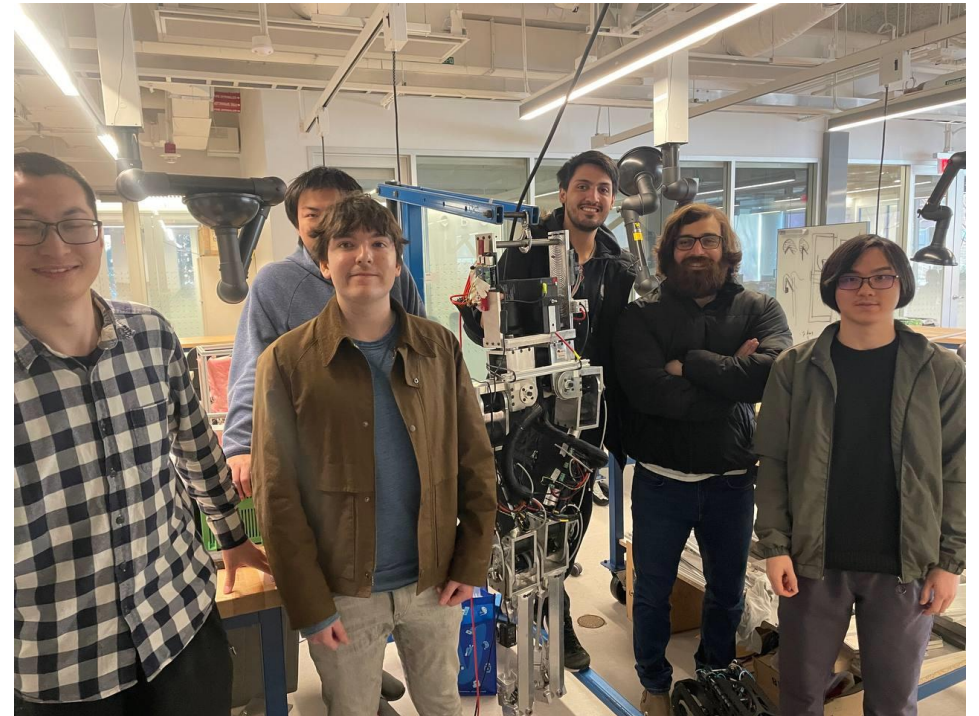
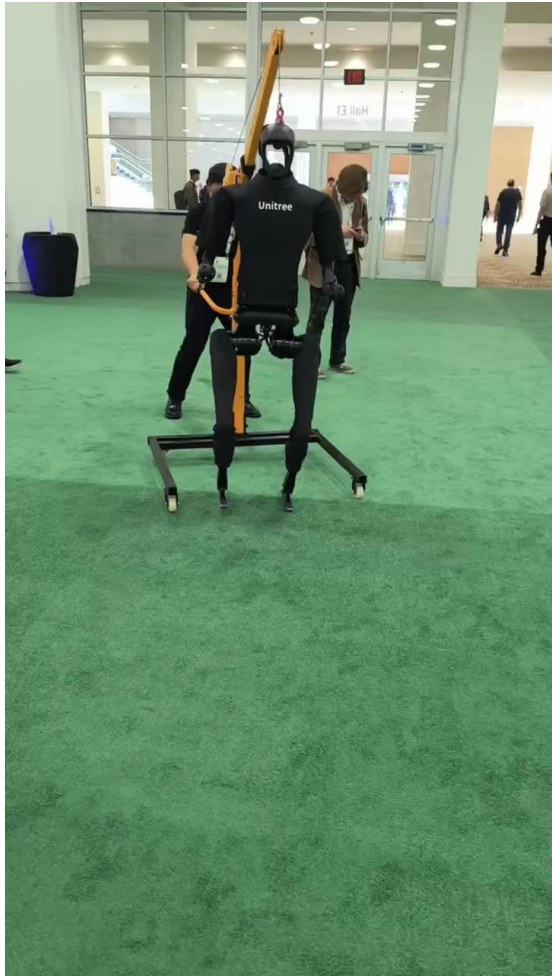
Ibrahim S. Hussein



Today's Lecture

- About Me: Research Interests and Beyond
- Schematic Diagram of the Mechatronics System
- Course introduction
 - Objectives
 - Logistics (Communication, Grading Rubric, References, Instructions)

About Me: Research Interests and Beyond



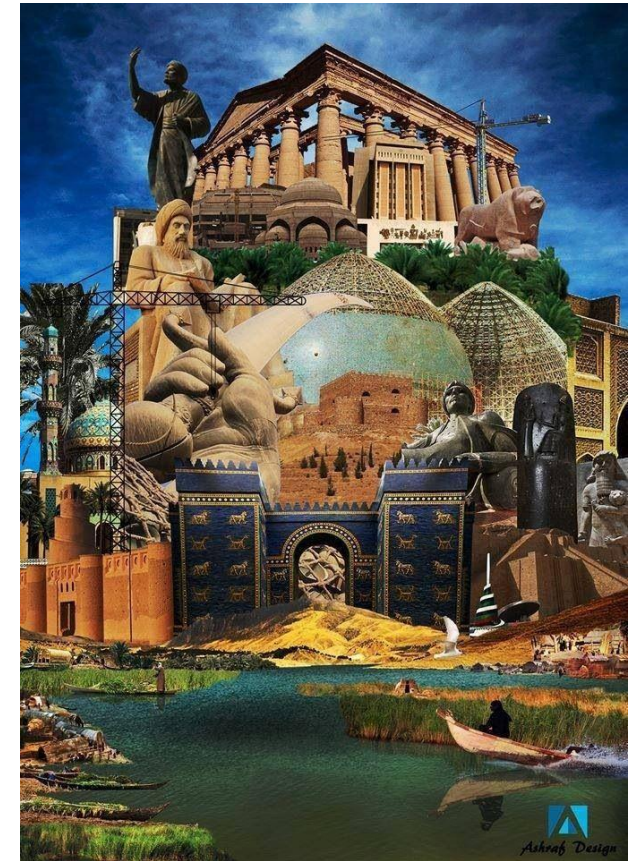
About Me: Non-Robotics Stuff



[3]

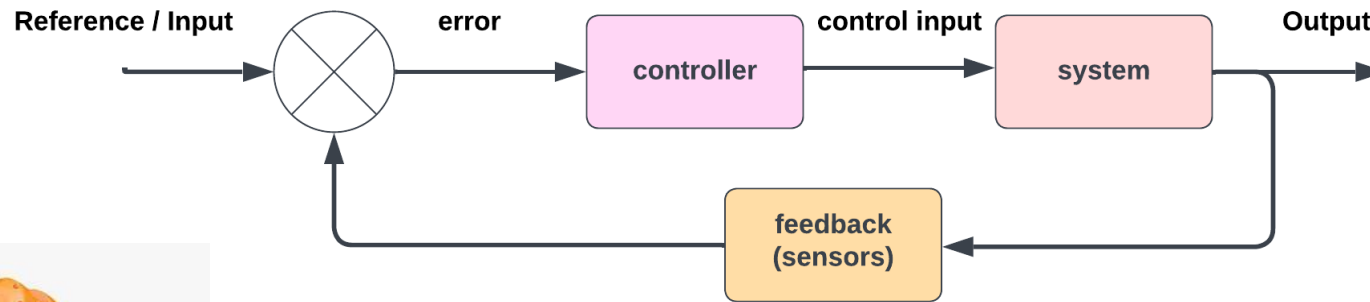


[2]



[1]

Schematic Diagram of the Mechatronics System



[4]

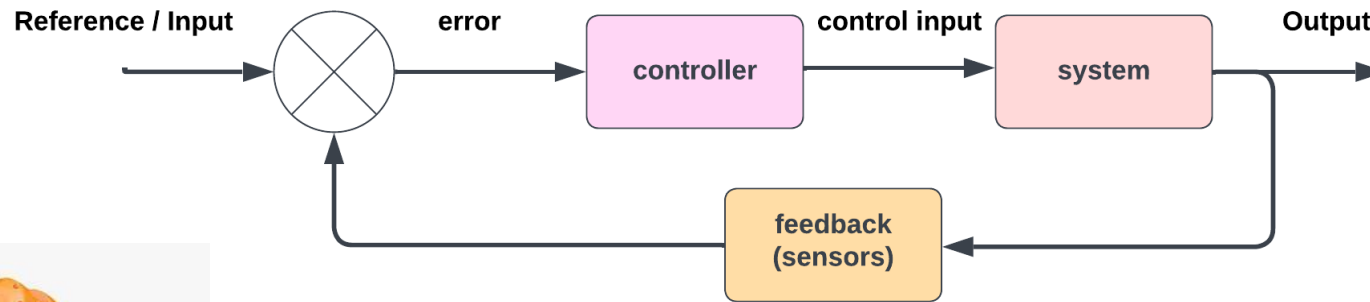


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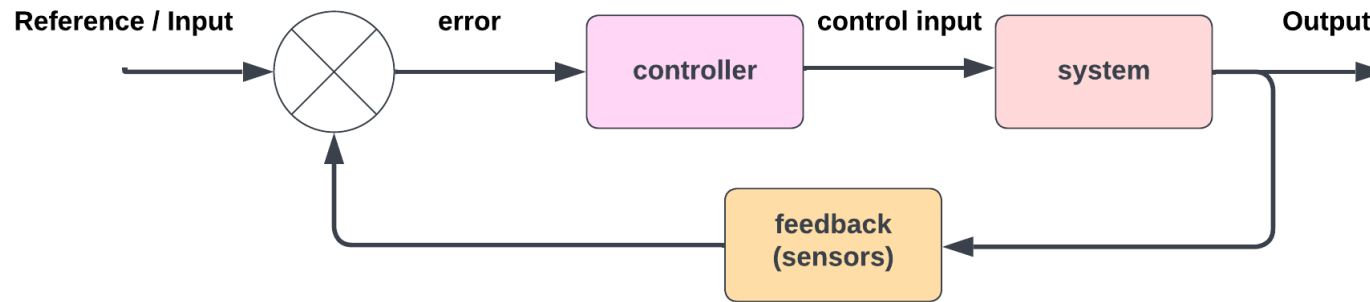
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Schematic Diagram of the Mechatronics System



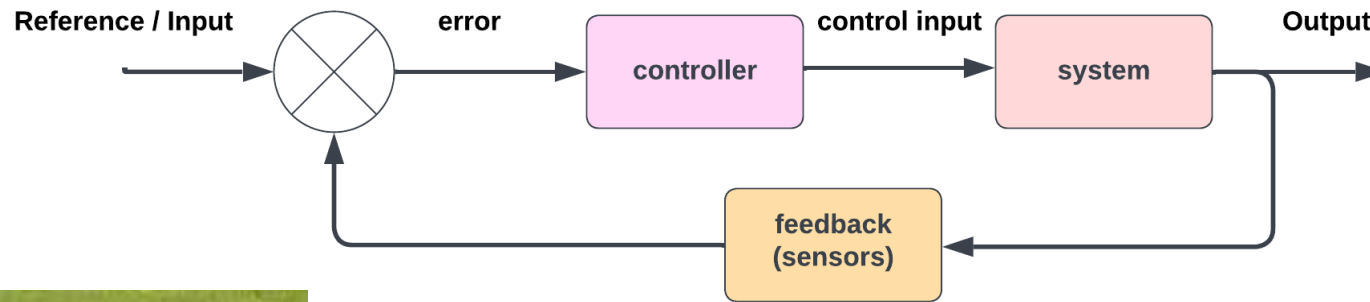
[4]

Schematic Diagram of the Mechatronics System



[5]

Schematic Diagram of the Mechatronics System



[6]

Course introduction: Objectives

Solve Differential Equations

Importance: Essential for modeling real-world phenomena like population growth, electrical circuits, and mechanical systems.

Apply the Chain Rule

Importance: Crucial for understanding how changes in one variable affect composite functions, used in fields like physics, economics, and machine learning.

Utilize Total Differentials and Gradients

Importance: Helps in approximating changes in multivariable functions and optimizing problems by finding steepest ascent directions.

Analyze Vector Fields (Divergence and Curl)

Importance: Important for understanding fluid flow, electromagnetism, and rotational effects in physics and engineering.

Work with Tangent Planes and Normal Lines

Importance: Key for modeling surfaces in 3D space, important for computer graphics and geometric analysis.

Compute Directional Derivatives

Importance: Allows analysis of how functions change in specific directions, useful for optimization and understanding function behavior.

Course introduction: Logistics (Communication)

- Lectures are in-person (Time and Address (later)).
- Office Hours: (later).
- Email: ibrahim.s@kecbu.uobaghdad.edu.iq

Course introduction: Logistics (Grading Rubric)

- Assignments:
 - Group Homeworks – 20
 - 2 Midterm Exam (Highest Score Counts) – 10
 - Quizzes – 5
 - Participation in class discussions and engagement in activities – 5
- Late Assignment Policy
 - In general late assignments will not be accepted

Course introduction: Logistics (References)

- Thomas Calculus 11th Edition
- Differential Equations for Engineers by Jeffrey R. Chasnov

Course introduction: Logistics (Instructions)

Be Punctual:

1. Arrive on time for each class and return from breaks promptly.

Respect Others:

1. Listen actively and respectfully when others are speaking.
2. Avoid interrupting and engage in discussions constructively.

Participate Actively:

1. Contribute to class discussions and activities.
2. Ask questions and seek help when needed.

Complete Assignments on Time:

1. Submit all assignments by the due dates.
2. Inform the instructor in advance if an extension is needed.

Follow Academic Integrity:

1. Do not engage in plagiarism or cheating.
2. Cite sources properly and collaborate only as allowed.

Maintain Professionalism:

1. Use appropriate language and behavior in class.
2. Dress appropriately for a professional learning environment.

Keep the Classroom Clean:

1. Dispose of trash properly and keep your workspace tidy.
2. Respect classroom equipment and materials.

Turn Off Mobile Devices:

1. Keep phones and other devices on silent or turned off during class.
2. Use devices only for class-related activities when permitted.

Respect Classroom Environment:

1. Follow instructions for group work and classroom procedures.
2. Respect the physical space and belongings of others.

Provide Constructive Feedback:

1. Offer feedback in a positive and constructive manner.
2. Address conflicts or concerns with the instructor directly and professionally.

Thank You!