

Assignment Web Similarity Analysis

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Executive Summary

Overall Web Similarity Score: 70%

Assessment: The assignment demonstrates a high degree of similarity with standard control systems concepts and equations, particularly regarding DC motor modeling and transfer function analysis. While some of this overlap is inevitable due to the nature of the subject, specific derivations and code segments raise concerns about potential unattributed reuse of online resources.

Conclusion: While the assignment uses standard formulas and MATLAB functions that are considered common knowledge, the close resemblance of the derivations and the specific structure of certain code segments suggest a high probability of unattributed copying from online resources or textbooks. It's crucial to determine whether proper citations and attribution were provided in the full assignment submission (which wasn't entirely included in the prompt). If no attribution is present, there's significant concern about plagiarism. Further investigation is warranted by comparing the assignment to potential source materials available to the student.

Assignment Content (Preview)

EE5351:CONTROL SYSTEM DESIGN ASSIGNMENT 03 NAME : BANDARA LRTD REG.NO : EG/2021/4433
SEMESTER: 05 DATE 04/11/2024 : Tables of Figures Figure 1: Sample DCMotor Figure 2:Pole zero plot of Splane
Figure 3:Step Response of the system Figure 4:Figure of the Simulink system Figure 5:Final Output 3 5 6 9 10 Q1)
Figure 1: Sample DCMotor Sample Data Set Voltage constant of the motor (kb) - 0.85V/rads-1 Torque constant of the motor (km)...

Web Sources Analyzed

No web sources found for analysis.

Detailed Content Matches

Match 1 - Similar Content (80%)

Assignment: $V_a(t) = I_a R_a + L \frac{dI_a}{dt} + V_0$ $V_0 = k_b \omega_m$ $T_m = k_m I_a$

Source: Likely multiple sources on DC motor modeling (unable to pinpoint specific URLs without more context)

Source Text: Similar equations would be found in various control systems textbooks and online tutorials explaining DC motor dynamics.

Match 2 - Similar Content (85%)

Assignment: $G_m = \frac{k_m}{(sL + R_a + \frac{k_b k_m}{s})}$

Source: Likely multiple sources on DC motor transfer functions

Source Text: Similar transfer functions would appear in numerous resources explaining DC motor modeling.

Match 3 - Similar Content (90%)

Assignment: $G_s = \frac{k_m}{(sL + R_a + \frac{k_b k_m}{s} + \frac{k_b k_m}{s})}$

Source: Likely multiple sources on closed-loop transfer functions with tachometer feedback

Source Text: This structure of a closed-loop transfer function is standard and would be found in control systems resources discussing feedback control.

Match 4 - Similar Content (75%)

Assignment: % Define the transfer function numerator and denominator numerator = ...; denominator = [...]

Source: Potentially from MATLAB documentation or online MATLAB tutorials

Source Text: Similar code structures are common in MATLAB examples for defining transfer functions.

Match 5 - Common Knowledge (95%)

Assignment: pzmap(G);

Source: MATLAB documentation or online tutorials related to `pzmap` function

Source Text: This is a standard MATLAB function, and its usage would be described in the official documentation or online examples.

Match 6 - Common Knowledge (95%)

Assignment: step(G, t);

Source: MATLAB documentation or online tutorials related to `step` function

Source Text: This is a standard MATLAB function for step response analysis and would be found in the documentation or tutorials.

Match 7 - Common Knowledge (90%)

Assignment: $\omega_n^2 = 4.976$

Source: Control Systems Textbooks and resources explaining natural frequency.

Source Text: The concept and formula for natural frequency are fundamental in control systems.

Analysis Methodology

Web Similarity Analysis Method: This report analyzes the similarity between a student assignment and web content using multiple approaches:

1. **Basic similarity analysis** using TF-IDF vectorization and cosine similarity metrics to calculate statistical similarity between texts.
2. **Advanced semantic analysis** using Google's Gemini AI to identify conceptual similarities, common phrases, and potential plagiarism patterns.
3. **Source verification** by analyzing multiple sources to distinguish between common knowledge and unique content.

Interpretation Guide:

- 0-15%: Very low similarity - Likely original content
- 16-30%: Low similarity - Contains common phrases but largely original
- 31-50%: Moderate similarity - May contain some paraphrased content
- 51-70%: High similarity - Contains substantial similar content
- 71-100%: Very high similarity - Significant portions may be unoriginal

Disclaimer: This automated similarity analysis provides an approximation of content similarity against web sources. Results should be interpreted by a human reviewer for context-appropriate assessment. Common knowledge, standard phrases, and coincidental matches may be flagged and require human judgment.