# Article information:

Practical Design and Application of Model Predictive Control | ScienceDirect
<https://www.sciencedirect.com/book/9780128139189/practical-design-and-application-of-model-predictive-control>

# Article summary:

1. Practical Design and Application of Model Predictive Control is a self-learning resource on how to design, tune and deploy an MPC using MATLAB® and Simulink®.

2. The book provides step-by-step solutions to nonlinear and challenging problems, such as ship heading and speed control, photovoltaic optimal control, and energy management of power-split and air-handling control.

3. The MATLAB® and Simulink® codes for the solutions are available for free download, and readers can connect with the authors through the dedicated website which includes additional free resources at www.practicalmpc.com.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

作为一本介绍如何使用MATLAB®和Simulink®设计、调整和部署MPC的自学资源，《Practical Design and Application of Model Predictive Control》提供了丰富的实例，包括双质量弹簧系统、船舶航向和速度控制、光伏最优控制以及功率分裂和空气处理控制的能源管理等。该书还介绍了如何将设计好的MPC控制器嵌入Arduino®等实时平台中。然而，该书存在以下问题：

1. 偏袒MATLAB®和Simulink®

该书只介绍了如何使用MATLAB®和Simulink®进行MPC设计，没有涉及其他工具或方法。这可能会导致读者对其他工具或方法缺乏了解。

2. 缺乏对风险的关注

该书没有提到在实际应用中可能出现的风险或挑战，例如硬件故障、传感器误差等。这可能会使读者低估实际应用中MPC的复杂性。

3. 片面报道

该书只介绍了成功案例，并没有涉及失败案例或挑战性较大的案例。这可能会使读者对MPC在实际应用中遇到的困难缺乏了解。

4. 缺失考虑点

该书没有涉及MPC在不同领域（例如医疗、金融）中的应用，也没有讨论不同领域之间可能存在的差异。这可能会使读者对MPC在不同领域中应用时需要注意哪些问题缺乏了解。

5. 宣传内容

该书宣传自己是“最详细”的MPC设计和调整指南之一，但并未提供与其他类似资源相比较的证据。此外，它还声称所选问题都是非线性且具有挑战性，但并未说明如何定义“非线性”和“具有挑战性”。

总之，《Practical Design and Application of Model Predictive Control》提供了一些有价值的信息和实例，但也存在上述问题。因此，在阅读本书时需要保持批判思维，并结合其他资源进行学习。

# Topics for further research:

* Alternative tools and methods for MPC design
* Risks and challenges in practical MPC applications
* Failed cases and difficult challenges in MPC applications
* Application of MPC in different fields and potential differences
* Evidence for the claim of being the most detailed MPC guide
* Definition of nonlinear and challenging problems in MPC applications

# Report location:

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