MATLAB Control Systems Engineering

Cesar Perez Lopez
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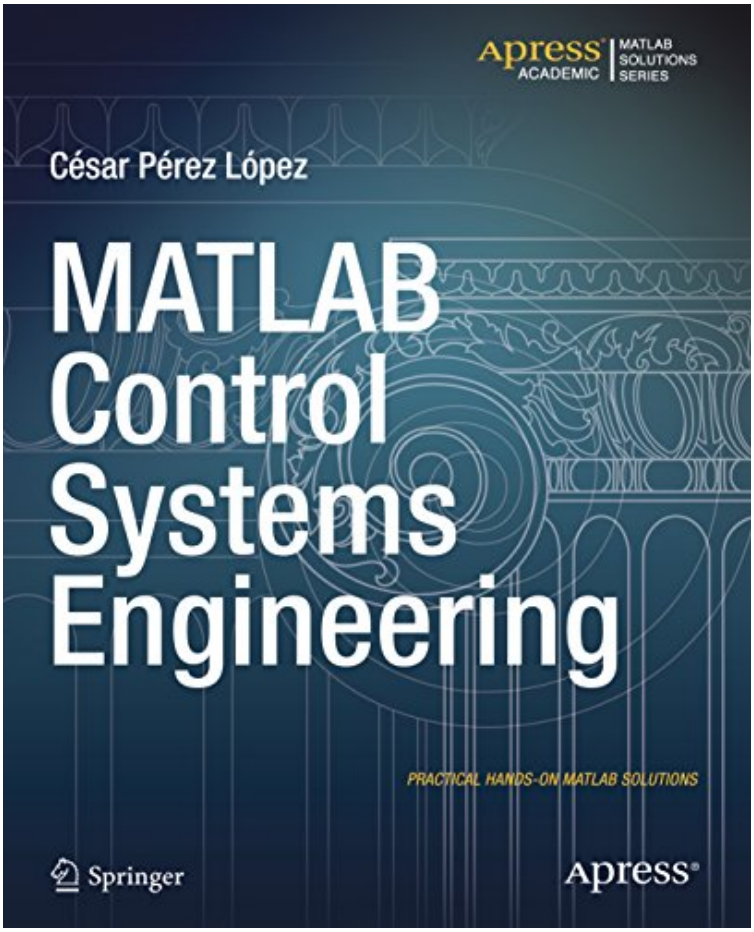

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MATLAB is a high-level language and environment for numerical computation, visualization, and programming. Using MATLAB, you can analyze data, develop algorithms, and create models and applications. The language, tools, and built-in math functions enable you to explore multiple approaches and reach a solution faster than with spreadsheets or traditional programming languages, such as C/C++ or Java.MATLAB Control Systems Engineering introduces you to the MATLAB language with practical hands-on instructions and results, allowing you to quickly achieve your goals. In addition to giving an introduction to the MATLAB environment and MATLAB programming, this book provides all the material needed to design and analyze control systems using MATLABrsquo;s specialized Control Systems Toolbox. The Control Systems Toolbox offers an extensive range of tools for classical and modern control design. Using these tools you can create models of linear time-invariant systems in transfer function, zero-pole-

gain or state space format. You can manipulate both discrete-time and continuous-time systems and convert between various representations. You can calculate and graph time response, frequency response and loci of roots. Other functions allow you to perform pole placement, optimal control and estimates. The Control System Toolbox is open and extendible, allowing you to create customized M-files to suit your specific applications. What you’ll learnHow to use the MATLAB environmentHow to program the MATLAB language from first principlesHow to design and analyze control systems using the Control Systems ToolboxHow to create models in various formats and convert between themHow to calculate and graph such features as time and frequency response and pole placementHow to use graphical analysis tools to optimize model parametersWho this book is forThis book is for anyone who wants to work in a practical, hands-on manner with MATLAB to design and analyze control systems. You'll already have a core understanding of undergraduate level engineering mathematics and of the fundamentals of control systems, and have access to an installed version of MATLAB, but no previous experience of MATLAB is assumed.

About the AuthorCeacute;sar Perez Lopez is a Professor at the Department of Statistics and Operations Research at the University of Madrid. Ceacute;sar Perez Lopez is also a Mathematician and Economist at the National Statistics Institute (INE) in Madrid, a body which belongs to the Superior Systems and Information Technology Department of the Spanish Government. Ceacute;sar also currently works at the Institute for Fiscal Studies in Madrid.