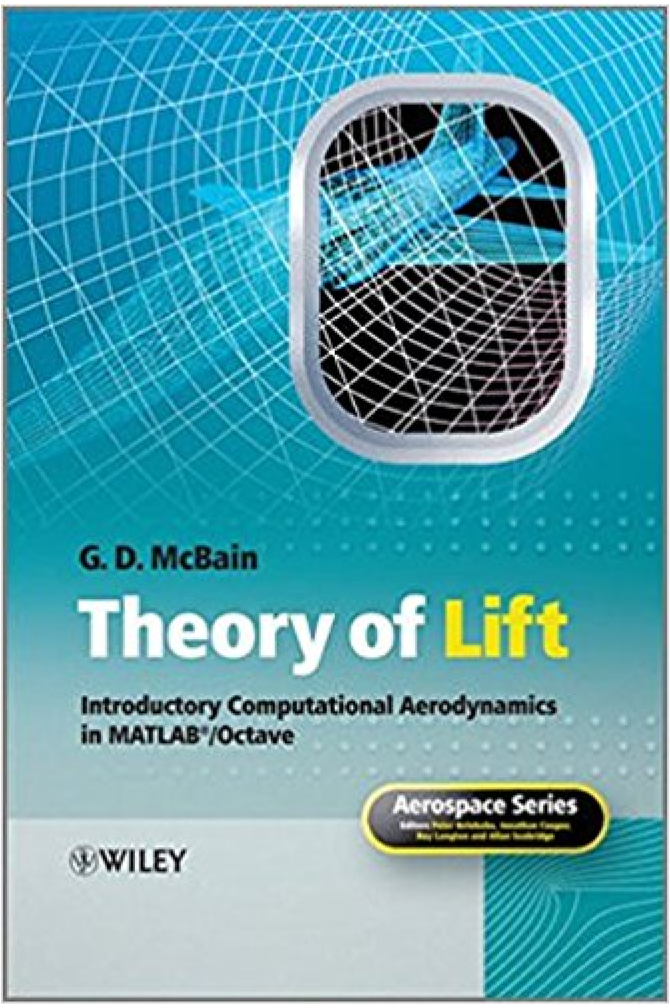
Theory Of Lift: Introductory Computational Aerodynamics In MATLAB/Octave



Synopsis

Starting from a basic knowledge of mathematics and mechanics gained in standard foundation classes, Theory of Lift: Introductory Computational Aerodynamics in MATLAB/Octave takes the reader conceptually through from the fundamental mechanics of liftÃ Â to the stage of actually being able to make practical calculations and predictions of the coefficient of lift for realistic wing profile and planform geometries. The classical framework and methods of aerodynamics are covered in detail and the reader is shown how they may be used to develop simple yet powerful MATLAB or Octave programs that accurately predict and visualise the dynamics of real wing shapes, using lumped vortex, panel, and vortex lattice methods. This book contains all the mathematical development and formulae required in standard incompressible aerodynamics as well as dozens of small but complete working programs which can be put to use immediately using either the popular MATLAB or free Octave computional modelling packages. Key features: Synthesizes the classical foundations of aerodynamics with hands-on computation, emphasizing interactivity and visualization. Includes complete source code for all programs, all listings having been tested for compatibility with both MATLAB and Octave. Companion website (www.wiley.com/go/mcbain) hosting codes and solutions. Theory of Lift: Introductory Computational Aerodynamics in MATLAB/Octave is an introductory text for graduate and senior undergraduate students on aeronautical and aerospace engineering courses and also forms a valuable reference for engineers and designers.

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Customer Reviews

Ã¢â ¬Å“This book is a very useful digest of key points from the literature, carefully structured and presented with helpful pointers as to how the successive aerodynamical models can be implemented in the Ã¢â ¬Ëœnow so readily available interactive matrix computation systems.Ã¢â ¬Â•Ã Â (Aeronautical Journal, 1 August 2013)

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It is not a bad text but the author try to cover 2D ideal flow, 3D ideal flow and some aspect of non-ideal flow (viscous flow, boundary layer and compressibility) in less than 300 pages (excluding appendix, front matter, index, etc.). This is very short considering figures, exercises, references and Octave code listing. Often, the explanations are incomplete and are very short. Also, this text needs more figures (when the author says something like "....it is easy to see that...", it is not necessary the case for the student). Something, the author refers even to figures in other books! Sorry, but I don’t have these figures in front of me when I am reading this book...I think that the first part (2D ideal aerodynamics) is acceptable but need more details. Indeed, the author cover complex potential theory and related topics (ex: Joukowksy transform, thin airfoil theory, panel methods). These topics are relatively abstract and difficult to grasp. The second part (3D ideal aerodynamics) is disappointing. The author covers too many topics. I had the impression that the author had a "rush" to complete this part. The last part (non-ideal flow in aerodynamics) is more a primer to more various topics such as boundary layer theory and compressible effect.Finally, the author systematically refers to various classical text such asLow-Speed Aerodynamics (J. Katz and A. Plotkin)Foundations of Aerodynamics (A.M. Kuethe and C.Y. Chow)Theoretical Aerodynamics (L.-M. Milne-Thomson)An Introduction to Theoretical and Computational Aerodynamics (J. Moran)Principles of Ideal-Fluid Aerodynamics (K. Karamcheti)Fundamentals of Aerodynamics (J.D. Anderson)So I am wondering what new this book offer? I can't answer this question since I don't have read all these books but I am not impressed by "Theory of Lift".