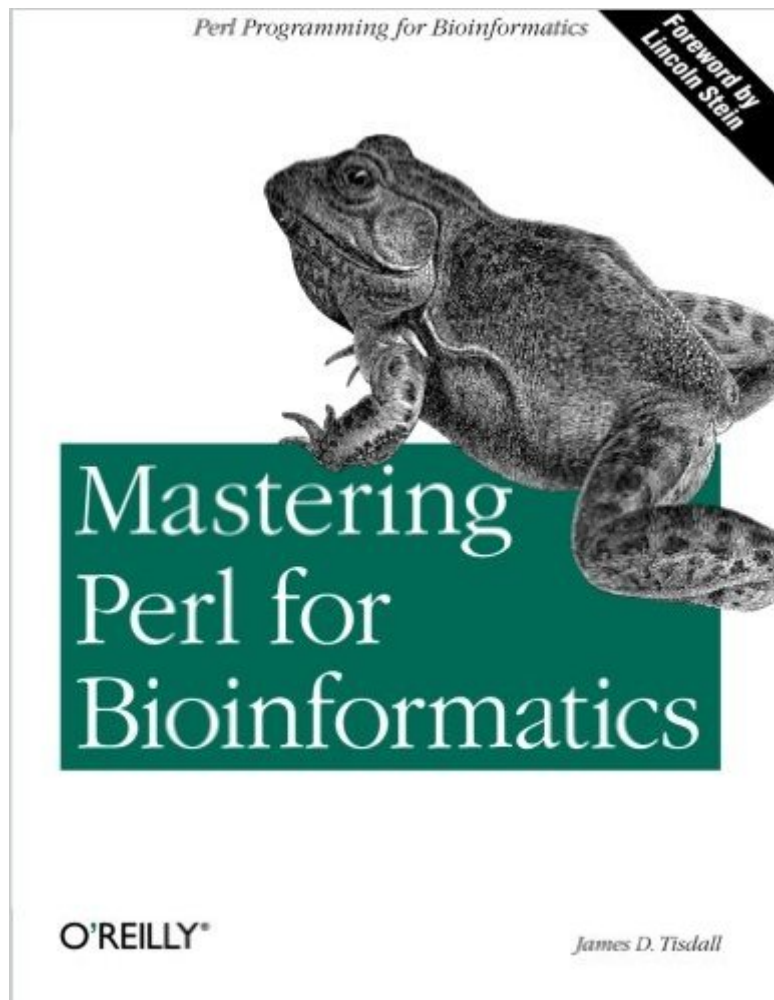# Mastering Perl For Bioinformatics

Synopsis

Historically, programming hasn't been considered a critical skill for biologists. But now, with access to vast amounts of biological data contained in public databases, programming skills are increasingly in strong demand in biology research and development. Perl, with its highly developed capacities in string handling, text processing, networking, and rapid prototyping, has emerged as the programming language of choice for biological data analysis.Mastering Perl for Bioinformatics covers the core Perl language and many of its module extensions, presenting them in the context of biological data and problems of pressing interest to the biological community. This book, along with Beginning Perl for Bioinformatics, forms a basic course in Perl programming. This second volume finishes the basic Perl tutorial material (references, complex data structures, object-oriented programming, use of modules--all presented in a biological context) and presents some advanced topics of considerable interest in bioinformatics.The range of topics covered in Mastering Perl for Bioinformatics prepares the reader for enduring and emerging developments in critical areas of bioinformatics programming such as:Gene findingString alignmentMethods of data storage and retrieval (SML and databases)Modeling of networks (graphs and Petri nets)Graphics (Tk)ParallelizationInterfacing with other programming languagesStatistics (PDL)Protein structure determinationBiological models of computation (DNA Computers)Biologists and computer scientists who have conquered the basics of Perl and are ready to move even further in their mastery of this versatile language will appreciate the author's well-balanced approach to applying Perl's analytical abilities to the field of bioinformatics. Full of practical examples and real-world biological problem solving, this book is a must for any reader wanting to move beyond beginner level Perl in bioinformatics.

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Customer Reviews

Published in late 2003, this clearly-written book picks up where "Beginning Perl for Bioinformatics" leaves off. Perl is very commonly used in the field of bioinformatics, and this book does a good job of surveying the more advanced topics in perl from the bioinformatics point-of-view. For a more thorough treatment of each of these topics though, the student will need to explore more specialized titles.While Tisdall's first volume teaches the core of procedural programming in Perl, this one takes you into the world of object-oriented (OO) programming. The first two chapters explore namespaces, modules, packages, references and data structures, all of which are prerequisites to OO programming. Common bioinformatics algorithms are introduced such as dynamic programming and approximate string matching.The next three chapters, 3-5, are the meat of this title. Here objects, methods and classes are introduced. Rather than just throwing out independent examples, these topics are developed by starting and building upon a Gene class, the first of several through which Tisdall guides the reader. Due to the practicality of these examples, they can even be used and improved by the reader for use in their own work.After this decent treatment of OO programming the book takes a turn into other realms of perl, each of which seems to have been written as a short introduction and for which other O'Reilly titles offer more complete coverage. These topics include the use of Perl to access relational databases, CGI programming and graphics generation using GD. If interested in any of these the reader should check out "Programming the Perl DBI", "CGI Programming with Perl" and "Perl Graphics Programming", respectively.Tisdall wraps up with a much-needed coverage of Bioperl, a large collection of Perl modules for common bioinformatics operations. I looked forward to this section most of all and was fairly disappointed with its brief, 28-page coverage. The entire chapter can currently be downloaded for free from O'Reilly's website as a PDF, but the Bioperl website has better examples and even a contributed course, though good documentation is still lacking in some areas.In all, I like this book because it does a good review of introducing object-oriented programming in Perl using relevant bioinformatics examples and introduces the reader to other topics including the DBI, CGI, and GD modules. While I believe this makes the book very useful, the coverage of each of the topics in this book will certainly not give the reader a mastery of any of them. For that, one will need to check out the three previously mentioned titles, along with "Learning Perl Objects, References & Modules." This book

does a fine job of introducing these four titles from the bioinformatician's perspective.

"Mastering Perl for Bioinformatics" is the follow-up to Tisdall's earlier "Beginning Perl for Bioinformatics". Both books are part of O'Reilly's lauded "animal books" series; "Beginning" was graced with tadpoles, while "Mastering" sports a frog.Naturally, this book picks up where the earlier one left off, diving headfirst into the details of Perl modules. Chapter two is a quick pass over some basic data structures, with discussion of how you'd implement each in Perl. Subsequent chapters cover object-oriented programming in Perl, using Perl with relational databases, using Perl with web services, generating graphics on the fly with Perl, and the use of the Bioperl suite of libraries.As might be expected, all the coding examples in the book are drawn from reasonably realistic bioinformatics situations. There's a little bit less hand-holding on the biological side in this book, relative to the earlier volume -- which I think is a good idea, as it gives more space to focus on the programming material.The one weakness of this book is that it covers quite a few topics, which means that it doesn't really go into great depth on any of them. The "survey" approach is well done, and it's very nice to have biologically relevant examples and exercises for the breath of material that is addressed, but I think the book might have been stronger if it forewent the "Perl and the Web" and "Perl and Graphics" chapters in favor of more focus on the Bioperl libraries.If you're a bioinformatics programmer who enjoyed "Beginning Perl for Bioinformatics", and you want to get a better idea of what more advanced Perl programming looks like and what sorts of things you can do with Perl, this book is a nice place to start. However, if you're looking for more specific information, other more focused books might be a better choice, if you can live without the biologically focused code examples.

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