#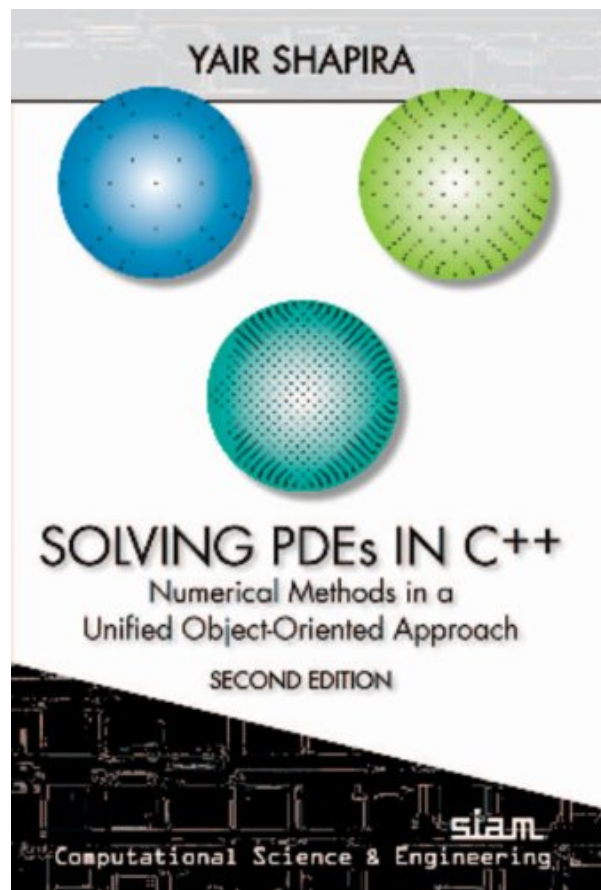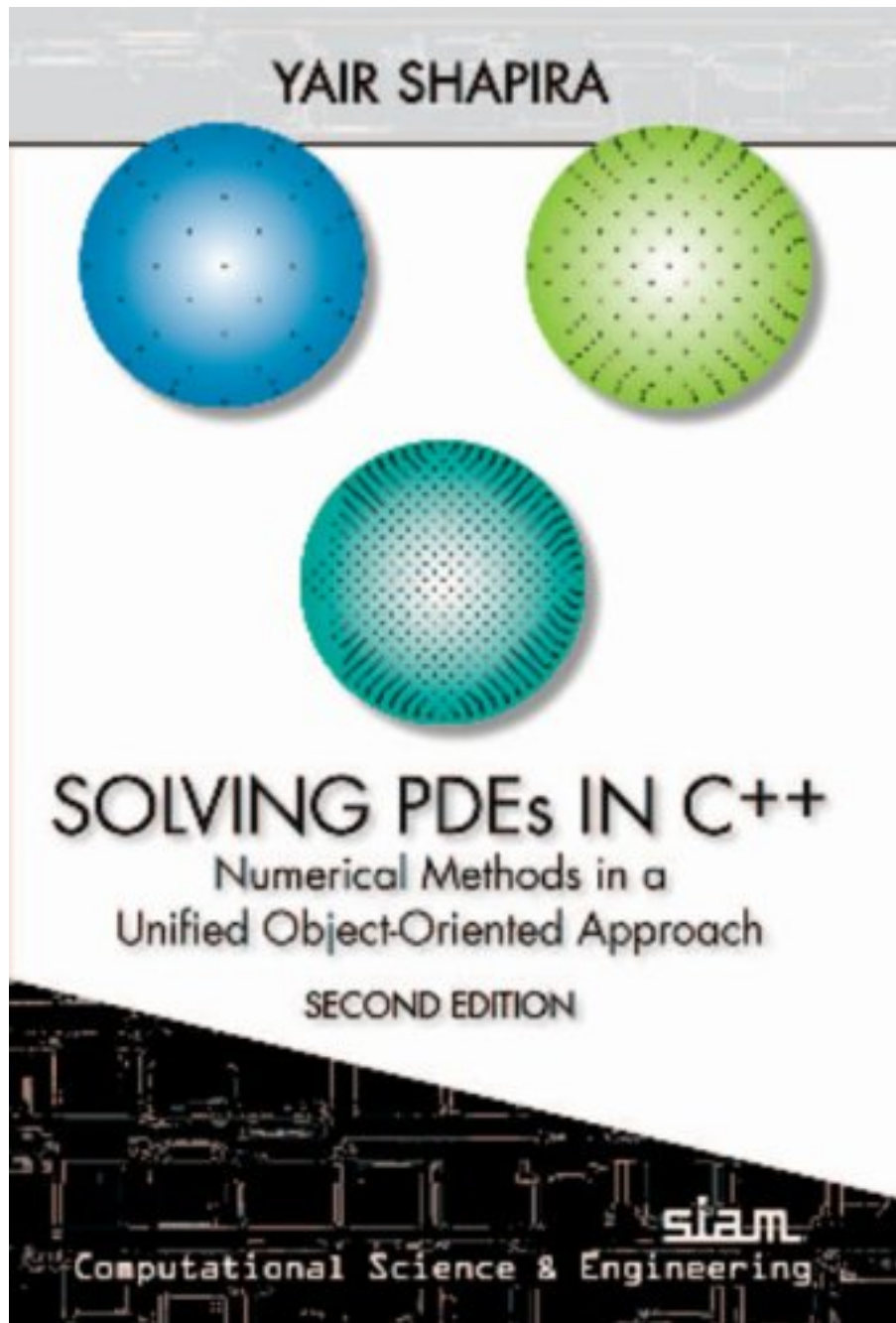 SOLVING PDES IN C++: NUMERICAL METHODS IN A UNIFIED OBJECT-ORIENTED APPROACH, SECOND EDITION (COMPUTATIONAL SCIENCE AND ENGINEERING) BY Y

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There are dozens of excellent books on C++ and object-oriented programming, but very few of them put the language into the perspective of scientific computing. The introductory part of the present book acts as a language introduction, while the main contents focus on how C++ can be used to implement numerical algorithms. I would say that this is a long-awaited type of textbook in the scientific computing community. -- Hans Petter Langtangen, Professor, Simula Research Laboratory and University of Oslo, Norway.

About the Author
Yair Shapira is engaged in research in the Computer Science Department, Technion-Israel Institute of Technology, Haifa, Israel. His main research interests are multigrid, preconditioning, and numerical methods. He is author of the books Matrix-Based Multigrid: Theory and Applications, Second Edition (Springer, 2008) and Mathematical Objects in C++: Computational Tools in a Unified Object-Oriented Approach (CRC, 2009).

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Whilst I'm no mathematician (rather, an engineer turned software developer), and so whilst I can't comment on the mathematical aspects presented, I didn't appreciate the C++ code in this book. An overview of C++ is given, but it doesn't use the terms that are generally used in a programming book. In addition to these peculiar terms, much of the C++ code is simply bad, and would likely crash sooner or later in the real world.

3 of 3 people found the following review helpful.
Good concept poor implementation
By Gadjo Dilo
As someone else mentioned already this is the only book in its kind and for me this is the only quality it possesses. If it really stood up for what the table of contents promises then it would be the perfect book but the content lets you down pretty quickly. The C++ language is used in a style that if you don't use other references there is no way to be able to understand C++ code written in the real world. Except for using the oo structures of the language everything else is in C style. But lets say you want to start with this book since it focuses on applications to pde and then perhaps move on to a more advanced reference for C++; then the book turns out to be too descriptive giving only a feeling of what's involved. There is no need to mention that no book can teach you the math for pde, however you won't learn C++ as well. The only thing you can expect, again as an other reviewer mentioned, is to run into some slick ideas about how to exploit oo concepts for meshes and adaptive refinement.

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Excellent for C/C++ Programmers who need this type of Math, but ...
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The book does give a good introduction to C/C++ if that is what you need. If you already are an expert at C/C++, this book is excellent introduction for applying PDE's with C/C++, though I could have asked for more examples.

I bought the book to help me write better PDE's in my work with Image Processing, Fuzzy Logic, Neural Networks. The Author does explain thing in a very concise way, but be prepared to do research and work through the exercises.

However, there is some noticable code in the book that just does not work, but can be easily corrected. There

is also some misinformation with the STL library and it's capabities. This can be a problem for those not well versed in the STL. Also some of the functionality is not as effiecent or well written as he claims to be. This is especially true the operator overloads, but it not bad.

Otherwise I would have given it a five star.

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