Introduction - how to use this book

Chances are, if you are bothering to read this introduction you are probably feeling a little nervous about having to learn to program. Maybe it seems impossible, like learning to yodel. Maybe you've already tried to learn, and failed miserably. That's OK. This book is designed for people like you.

When I (Ione) first went to graduate school I didn't know how to turn a computer on. Honest. Sometimes the on button was on the monitor, sometimes it was on the keyboard, sometimes it was hidden at the back. Sometimes the "on-thingie" was a circle with some weird symbol on it, sometimes it was a switch. Sometimes the computer was really on, but was *pretending* to be off and showing no signs of life, so you were switching the miserable thing off, when you thought you were turning it on. It drove me crazy.

Anyway, I met Geoff, the co-author of this book (and my husband) when I deleted the entire contents of a computer (including the operating system) by dragging some mysterious icon from the desktop to into the trash and deleting it. Geoff was the TA responsible for bringing the machine back to life. It wasn't the best start to a relationship.

Geoff's one of those geeks who was programming a Commodore 80 in his father's lab at the age of 13. If you're a graduate student that will mean absolutely nothing to you, since Commodore 80s were obsolete before you were born. Your parents may remember them. But even Geoff had trouble getting the computer I munged back into the land of the living, and it was never quite the same again.

Anyway, if I can learn to program, you can too. When we wrote this book we gave it to beginning programmers. We chose graduate students with horrible programming phobias and a defeatist attitude. They all learned to program. So no excuses.

And it really *is* important to learn to program if you are an experimental scientist. It's possible to use experimental software packages. But that is a little like never learning to drive. Sometimes that might be totally OK, and the bus or the subway will take you exactly where you want to go. But there are some really interesting places where public transport just won't go, and that's where you see the things that no one has ever seen before. If you can program you can create any experiment you like, exactly the way you want it. You'll never be limited by what your software can do, and you'll never be scooped by someone else because you had to wait for your programmer to come back from her six month tour of Bhutan.

But learning to program *is* a little like learning to yodel. It's not easy, and it takes time. I'm sure you are in a hurry to get your first experiment up and running, but unless you are already pretty experienced in some other programming language do NOT just try to dive in at the middle and modify one of the demo programs. I guarantee that you will end up in a nasty crumpled mess and there will be tears.

Take a deep breath, make yourself a cup of tea, and start at the beginning of this book. Try to set aside blocks of time of about 3 hours. If you're really stuck on an exercise, and you've been programming for more than 3 hours, STOP FOR AT LEAST AN HOUR, do something else, preferably outside, and come back to the problem later. If you still can't solve it, then try again the next morning. It's amazing how many insolvable bugs are perfectly obvious the next morning.

Finally, if there's anyone more experienced than you around, beg them or bribe for help when you get stuck. Especially at the beginning, you may spend hours of time on something that it will take them 10 seconds to explain. If you are on your own, try to buddy up with another beginner.

Finally, go through the entire book. Even if you think that some of the experiments aren't relevant to what you want from Matlab, don't skip those parts of the book, since you'll probably still need the skills that you learn in those pieces of code. We've been very careful to make sure that the first time you learn a new skill, it's made as easy and clear as possible. But that means you shouldn't skip parts of the book unless you already know how to program in another language.

Finally, do the exercises, do the exercises, ***do the exercises***. If you do them, all of them, you will be able to program at the end of this book. If you don't, you won't. It's as simple as that.
You've been warned.

Happy Programming!

Ione & Geoff