Writing for Computer Science

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Justin Zobel

Writing for Computer Science

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Preface

Writing for Computer Science is an introduction to doing and describing research. For the most part the book is a discussion of good writing style and effective research strategies. Some of the material is accepted wisdom, some is controversial, and some is my opinions. Although the book is brief, it is designed to be comprehensive: some readers may be interested in exploring topics further, but for most readers this book should be sufficient.

The first edition of this book was almost entirely about writing. This edition, partly in response to reader feedback and partly in response to issues that arose in my own experiences as an advisor, researcher, and referee, is also about research methods. Indeed, the two topics—writing about and doing research—are not clearly separated. It is a small step from asking *how do I write?* to asking *what is it that I write about?*

As previously, the guidance on writing focuses on research, but much of the material is applicable to general technical and professional communication. Likewise, the guidance on the practice of research has broader lessons. A practitioner trying a new algorithm or explaining to colleagues why one solution is preferable to another should be confident that the arguments are built on robust foundations. And, while this edition has a stronger emphasis on research than did the first, nothing has been deleted; there is additional material on research, but the guidance on writing has not been taken away.

Since the first edition appeared, there have been many changes in the culture and environment of research. The web has become universal, whereas, for example, few papers were online. There are also more subtle changes. It now seems to be rare that a spoken presentation is truly unprofessional; a decade ago many talks were unendurably awful. The growth in the use of good tools for presentations has been a key factor in this development, and the use of overhead transparencies has become archaic.

On the other hand, it now seems common that a talk does not have a clear message and is merely a compilation of clever visuals. Writing style has become less stilted, which is a change for the better, but too many authors are submitting work too early. Today, algorithms are often poorly described; a well-described algorithm has become a welcome, rare exception. The web provides easy access to literature, but perhaps the necessity of using a library imposed discipline, as, increasingly, past work appears to be neglected.

The perspectives of all scientists are shaped by the research cultures in which they work. My research has involved some theoretical studies, but the bulk of my work has been experimental. I appreciate theoretical work for its elegance, yet find it sterile when it is too detached from practical value. While experimental work can be ad hoc, it can also be deeply satisfying, with the rewards of probing the space of possible algorithms and producing technology that can be applied to the things we do in practice. My perspective on research comes from this background, as does the use of experimental work as examples in this book (an approach that is also justified by the fact that such work is generally easier to outline than is a theoretical contribution). But that doesn't mean that my opinions are simply private biases. They are—I hope!—the considered views of a scientist with experience of different kinds of research.

Many people helped with this book in one way or another. For the first edition, thanks were due in particular to Alistair Moffat, who contributed to Chapters 6, 7, 8, 9, and 12; and to Philip Dart, who also contributed to Chapter 12. I remain grateful to both Alistair and Philip for our collaborations. Additionally, I thanked Isaac Balbin, Gill Dobbie, Evan Harris, Michael Fuller, Mary and Werner Pelz, Kotagiri Ramamohanarao, Ron Sacks-Davis, Ian Shelley, James Thom, Rodney Topor, Ross Wilkinson, and Hugh Williams. I also thanked my research students and the students who participated in my research methods lectures. To all these people—thanks again.

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February 2004

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