

Metacognition, Confidence and Bias in Software Estimating

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Abstract

Effective prediction, for example of project costs, is an essential aspect of software development. Although considerable research has been devoted to this topic, the role of the human experts who make and are responsible for predictions, has been under-emphasised. We focus on how metacognitive (thinking about thinking) awareness impacts on prediction and confidence (uncertainty assessment) as confidence plays a crucial role in prediction. For example a manager may be 90% confident that the system testing will be completed within 4 weeks. Over-confidence may be as great a threat as over-optimism and the two are inter-linked.

Our aim is to improve the prediction practices of software professionals by reducing over-confidence and over-optimism (bias) which are recurring problems.

The talk will cover:

- the meaning of a prediction, that it is a probabilistic statement which implies two components: (i) the predicted value and (ii) the degree of confidence in the prediction
- evaluating the quality of a prediction includes (i) error (ii) bias and (iii) variance or scatter
- cognitive sources of over-confidence and over-optimism e.g. the planning fallacy, anchoring effects and the peak-end rule
- de-biasing strategies through enhancing metacognitive awareness

Biographies

Prof. Shepperd has the chair of Software Technology at Brunel University. He received a PhD in computer science from the Open University in 1991 for his work in measurement theory and its application to empirical software engineering. He has published more than 150 refereed papers and three books in the areas of software engineering and machine learning. Previously he worked for a number of years as a software developer for a major UK bank.	Dr Mair is a senior lecturer in psychology at Southampton Solent University. She is a Chartered Psychologist and Chartered Scientist. Carolyn obtained her PhD in Cognitive Neuroscience from Bournemouth University for her investigations into spatio-temporal aspects of visual memory and completed her post-doc at Brunel University. Carolyn has previously worked as a graphic designer, portrait artist, dressmaker and teacher of English as a foreign language.
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