

Preface

This book is based on the results of over 14 years of research into the topic of partial differential equations applied to problems relating to geometric design. The book is intended as an introduction to the topic. It will equally serve as a reference for the mathematical fundamentals and modern applications using partial differential equations as a tool for geometric design. The book starts off with a gentle introduction to the relevant mathematical concepts for geometric design and then introduces partial differential equations to the reader.

The bulk of the book relates to the use of a class of partial differential equations known as elliptic partial differential equations which are used for surface generation, manipulation as well as design for function. Throughout the book, in order to enhance the understanding of the reader, practical examples with relevant illustrations as well as explanations are used extensively. Moreover, for the purpose of enabling the reader to gain practical experience some examples of computer code is supplied.

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Ilkley, UK

Hassan Ugail



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Ugail, H.

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