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| 1. Record Nr. | UNINA9910817548503321 |
| Titolo | Computer-graphic facial reconstruction [[electronic resource] /] / [edited by] John G. Clement and Murray K. Marks |
| Pubbl/distr/stampa | Burlington, MA, : Elsevier Academic Press, c2005 |
| ISBN | 1-280-63793-5 9786610637935 0-08-045422-4 |
| Edizione | [1st ed.] |
| Descrizione fisica | 1 online resource (409 p.) |
| Altri autori (Persone) | ClementJohn G MarksMurray K |
| Disciplina | 006.4 614.1 |
| Soggetti | Forensic osteology Facial reconstruction (Anthropology) Forensic anthropology Human face recognition (Computer science) Dead |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Note generali | Description based upon print version of record. |
| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | COVER; COMPUTER-GRAPHIC FACIAL RECONSTRUCTION; CONTENTS; FOREWORD; PREFACE; ACKNOWLEDGEMENTS; ABOUT THE EDITORS; LIST OF CONTRIBUTORS; PART I HISTORY AND BACKGROUND; CHAPTER 1 INTRODUCTION TO FACIAL RECONSTRUCTION; 1.1 BACKGROUND; 1.2 UNITING MICRO- AND MACROMORPHOLOGICAL THEMES; 1.3 FORENSIC IMPERATIVES; REFERENCES; CHAPTER 2 CLASSICAL NON- COMPUTER-ASSISTED CRANIOFACIAL RECONSTRUCTION; 2.1 INTRODUCTION; 2.2 CRANIOFACIAL RECONSTRUCTION; 2.3 HISTORY OF CFR; 2.4 ANTHROPOLOGICAL ANALYSIS OF THE SKULL; 2.5 SOFT- TISSUE DEPTH; 2.6 MANUAL 2D CFR; 2.6.1 SKETCHES; 2.6.2 GEORGE'S METHOD 2.7 MANUAL 3D CFR2.8 DISCUSSION; ACKNOWLEDGEMENTS; REFERENCES; CHAPTER 3 THE WISDOM OF BONES: FACIAL APPROXIMATION ON THE SKULL; 3.1 INTRODUCTION; 3.2 THE PURPOSE OF FACIAL APPROXIMATION; 3.3 A HISTORIC PERSPECTIVE; 3.4 WHAT |

THE SKULL CAN TELL US: POSITIONAL RELATIONSHIPS BETWEEN THE SKULL AND THE FACIAL FEATURES; 3.4.1 THE RELATIONSHIP BETWEEN THE ORBIT AND THE EYE; 3.4.2 THE RELATIONSHIP BETWEEN THE BONY NASAL APERTURE AND THE NOSE; 3.4.3 THE RELATIONSHIP BETWEEN THE SKULL, THE TEETH, AND THE MOUTH; 3.4.4 THE RELATIONSHIP BETWEEN THE SKULL AND THE EARS; 3.4.5 SEXUAL DIMORPHISM IN THE FACE

3.5 BUILDING THE FACE FROM THE SKULL 3.5.1 PRELIMINARY COLLECTION OF DATA; 3.5.2 CLEANING AND PREPARATION OF THE SKULL; 3.5.3 REPAIRING THE DAMAGED SKULL; 3.5.4 THE CLAY MODELING PROCEDURE; 3.6 HOW SUCCESSFUL IS FACIAL APPROXIMATION?; 3.7 COMPUTER ENHANCEMENT OF THE APPROXIMATION; 3.8 PUBLICIZING THE RESULTS; 3.9 CASE REPORTS; 3.10 CONCLUSION; REFERENCES; CHAPTER 4 THREE-DIMENSIONAL QUANTIFICATION OF FACIAL SHAPE; 4.1 INTRODUCTION; 4.2 BACKGROUND: WHY MEASURE FACES?; 4.3 BACKGROUND: WHAT IS A FACE?; 4.4 DATA ACQUISITION METHODS; 4.5 SOFTWARE TOOLS FOR DATA EXTRACTION AND ANALYSIS 4.6 QUANTITATIVE DIFFERENCES BETWEEN FACES 4.7 DATA TYPES: POINT CLOUDS; 4.8 DATA TYPES: LANDMARKS; 4.9 DATA TYPES: OUTLINES; 4.10 CALCULATION OF DIFFERENCES BETWEEN FACES; 4.11 CONCLUSION; ACKNOWLEDGEMENTS; REFERENCES; CHAPTER 5 AUTOMATIC 3D FACIAL RECONSTRUCTION BY FEATURE-BASED REGISTRATION OF A REFERENCE HEAD; 5.1 INTRODUCTION; MORPHOMETRY-BASED METHODS; MORPHOLOGY-BASED METHODS; REGISTRATION-BASED METHODS; 5.2 DESCRIPTION OF THE METHOD; 5.2.1 DATA ACQUISITION; THE ACQUISITION PROCESS; THE REFERENCE HEAD; EXPERIMENT 1: UNKNOWN CONTEMPORARY SKULL EXPERIMENT 2: PREHISTORIC SKULL OF THE MAN OF TAUTAVEL 5.2.2 EXTRACTION OF FEATURE POINTS AND LINES; 5.2.3 REGISTRATION OF FEATURE LINES; 5.2.4 GEOMETRICAL NORMALIZATION; 5.2.5 COMPUTING THE 3D TRANSFORMATION; 5.3 RESULTS AND DISCUSSION; 5.3.1 THE PROBLEM OF THE VALIDATION; EXPERIMENT 1; EXPERIMENT 2; 5.3.2 DEFINING A REFERENCE HEAD; 5.3.3 MODELING THE HUMAN VARIABILITY; AGE; ETHNICITY; CORPULENCE; EXPRESSIVITY; 5.3.4 INFERRING ILL-DEFINED FACIAL PARTS OR FEATURES; 5.4 CONCLUSION; ACKNOWLEDGEMENTS; REFERENCES; PART II CONCEPTS AND CREATION OF FACIAL RECONSTRUCTION MODELS CHAPTER 6 TWO-DIMENSIONAL COMPUTER-GENERATED AVERAGE HUMAN FACE MORPHOLOGY AND FACIAL APPROXIMATION

Sommario/riassunto

This unique book looks at a cost-efficient, fast and accurate means of facial reconstruction--from segmented, decomposed, or skeletal remains--using computer-graphic and computational means.

Computer-Graphic Facial Reconstruction is designed as a valuable resource for those scientists designing new research projects and protocols, as well as a practical handbook of methods and techniques for medico-legal practitioners who actually identify the faceless victims of crime. It looks at a variety of approaches: artificial intelligence using neural networks, case-based reasoning, Bayesian be
