

# Contents

<b>1</b>	<b>Introduction: Brain-Computer Interfaces for Artistic Expression . . . . .</b>	<b>1</b>
	Anton Nijholt	
<b>Part I History, State of the Art, and Developments of Brain Art</b>		
<b>2</b>	<b>The Interface Is the (Art)Work: EEG-Feedback, Circuited Selves and the Rise of Real-Time Brainmedia (1964–1977) . . . . .</b>	<b>33</b>
	Flora Lysen	
<b>3</b>	<b>Brain-Computer Interfaces in Contemporary Art: A State of the Art and Taxonomy . . . . .</b>	<b>65</b>
	Mirjana Prpa and Philippe Pasquier	
<b>4</b>	<b>More Than One—Artistic Explorations with Multi-agent BCIs . . . . .</b>	<b>117</b>
	David Rosenboom and Tim Mullen	
<b>5</b>	<b>Evaluating BCI for Musical Expression: Historical Approaches, Challenges and Benefits . . . . .</b>	<b>145</b>
	Duncan A. H. Williams	
<b>Part II Exploring Our ‘Self’ with Brain Art</b>		
<b>6</b>	<b>Using Synchrony-Based Neurofeedback in Search of Human Connectedness . . . . .</b>	<b>161</b>
	Suzanne Dikker, Sean Montgomery and Suzan Tunca	
<b>7</b>	<b>EEG KISS: Shared Multi-modal, Multi Brain Computer Interface Experience, in Public Space . . . . .</b>	<b>207</b>
	Karen Lancel, Hermen Maat and Frances Brazier	
<b>8</b>	<b>New Ways of Knowing Ourselves. BCI Facilitating Artistic Exploration of Our Biology . . . . .</b>	<b>229</b>
	Laura Jade and Sam Gentle	

**Part III Your Brain on Art: Perceiving, Understanding, and Creating**

- 9 **Understanding Perceptual Experience of Art Using Mobile Brain/Body Imaging** ..... 265  
Zakaria Djebbara, Lars Brorson Fich and Klaus Gramann
- 10 **Your Brain on Art: A New Paradigm to Study Artistic Creativity Based on the ‘Exquisite Corpse’ Using Mobile Brain-Body Imaging** ..... 283  
Jesus G. Cruz-Garza, Girija Chatufale, Dario Robleto and Jose L. Contreras-Vidal
- 11 ***Self-conscious/Physical Memory: An Immersive, Kinetic Art Installation Driven by Real-Time and Archival EEG Signals*** ..... 309  
Eric Todd, Jesus G. Cruz-Garza, Austin Moreau, James Templeton and Jose Luis Contreras-Vidal

**Part IV Using Brain Art in Therapy**

- 12 **Advancing the Rehabilitative and Therapeutic Potential of BCI and Noninvasive Sensing Systems** ..... 327  
Stephanie M. Scott, Chris Raftery and Charles Anderson
- 13 **BCI-Based Expressive Arts: Moving Toward Mind-Body Alignment** ..... 355  
Rainbow Tin Hung Ho, Sunee H. Markosov, Nathan Sanders and Chang S. Nam

**Part V Brain Art: Control, Tools, Technology, and Hacking**

- 14 **Brain-Controlled Cinema** ..... 377  
Richard Ramchurn, Sarah Martindale, Max L. Wilson, Steve Benford and Alan Chamberlain
- 15 **The Making of Brain Painting—From the Idea to Daily Life Use by People in the Locked-in State** ..... 409  
Andrea Kübler and Loic Botrel
- 16 **Methods and Tools for Using BCI with Augmented and Virtual Reality** ..... 433  
Felix Putze
- 17 **The BR4IN.IO Hackathons** ..... 447  
Christoph Guger, Brendan Z. Allison, Martin Walchshofer and Sarah Breinbauer