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Generative Design Visualize Program And Create With Processing

Published on the occasion of an

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exhibition held at the Walker Art Center, Minneapolis, Minn. and four other institutions between Oct. 22. 2011 and Dec. 2013.

Generative design, once known only to insiders as a revolutionary method of creating artwork, models, and animations with programmed

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algorithms, has in recent years become a popular tool for designers. By using simple languages such as JavaScript in p5.js, artists and makers can create everything from interactive typography and textiles to 3D-printed furniture to complex and elegant infographics. This updated volume gives a jump-start on

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coding strategies, with step-by-step tutorials for creating visual experiments that explore the possibilities of color, form, typography, and images.

Generative Design includes a gallery of all-new artwork from a range of international designers—fine art projects as well as commercial ones for

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**Nike, Monotype, Dolby Laboratories,
the musician Bjork, and others.**

**Cylinders, spheres and cubes are a
small handful of shapes that can be
defined by a single word. However,
most shapes cannot be found in a
dictionary. They belong to an
alternative plastic world defined by**

trigonometry: a mathematical world where all shapes can be described under one systematic language and where any shape can transform into another. This visually striking guidebook clearly and systematically lays out the basic foundation for using these mathematical transformations as design

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tools. It is intended for architects, designers, and anyone with the curiosity to understand the link between shapes and the equations behind them.

The topology optimization method solves the basic engineering problem of distributing a limited amount of material in a design space. The first

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edition of this book has become the standard text on optimal design which is concerned with the optimization of structural topology, shape and material. This edition, has been substantially revised and updated to reflect progress made in modelling and computational procedures. It also encompasses a

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comprehensive and unified description of the state-of-the-art of the so-called material distribution method, based on the use of mathematical programming and finite elements. Applications treated include not only structures but also materials and MEMS.

Creative Coding and Generative Art in

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Processing 2

House X

**An Introduction to Structural
Optimization**

When the Machine Made Art

The Four Steps to Creative

**Programming with the Processing
Language**

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Make Your Own Algorithmic Art

*The creator of the
designer website,
maeda@media, explores the
computer as an artistic
medium, recounting how his
students and he have*

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*rendered some of the most
digitally sophisticated
pieces of design in modern
history, in a compilation
that showcases some of the
ACG's key achievements in
the fields of digital*

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*typography, interaction
design, education, and
more. Original.*

*Uses the architectural
design of a house to show
the principles of
structuralism and a*

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*possible reaction against
traditional functionalism
A bold and unprecedented
look at a cutting-edge
movement in architecture
Toward a Living
Architecture? is the first*

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*book-length critique of
the emerging field of
generative architecture
and its nexus with
computation, biology, and
complexity. Starting from
the assertion that we*

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*should take generative
architects' rhetoric of
biology and sustainability
seriously, Christina
Cogdell examines their
claims from the
standpoints of the*

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*sciences they draw
on—complex systems theory,
evolutionary theory,
genetics and epigenetics,
and synthetic biology. She
reveals significant
disconnects while also*

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*pointing to approaches and
projects with significant
potential for further
development. Arguing that
architectural design today
often only masquerades as
sustainable, Cogdell*

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*demonstrates how the
language of some cutting-
edge practitioners and
educators can mislead
students and clients into
thinking they are getting
something biological when*

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they are not. In a narrative that moves from the computational toward the biological and from current practice to visionary futures, Cogdell uses life-cycle analysis

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*as a baseline for parsing
the material, energetic,
and pollution differences
between different digital
and biological design and
construction approaches.
Contrary to green-tech*

Bookmark File PDF Generative Design Visualize Program And Create With Processing

*sustainability advocates,
she questions whether
quartzite-based silicon
technologies and their
reliance on rare earth
metals as currently
designed are sustainable*

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*for much longer,
challenging common
projections of a
computationally designed
and manufactured future.
Moreover, in critiquing
contemporary architecture*

Bookmark File PDF Generative Design Visualize Program And Create With Processing

*and science from a
historical vantage point,
she reveals the
similarities between
eugenic design of the
1930s and the aims of some
generative architects and*

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*engineering synthetic
biologists today. Each
chapter addresses a
current architectural
school or program while
also exploring a distinct
aspect of the*

Bookmark File PDF Generative Design Visualize Program And Create With Processing

*corresponding scientific
language, theory, or
practice. No other book
critiques generative
architecture by evaluating
its scientific rhetoric
and disjunction from*

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*actual scientific theory
and practice. Based on the
author's years of field
research in architecture
studios and biological
labs, this rare, field-
building book does no less*

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*than definitively,
unsparingly explain the
role of the natural
sciences within
contemporary architecture.
Summary Generative Art
presents both the*

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*technique and the beauty
of algorithmic art. The
book includes high-quality
examples of generative
art, along with the
specific programmatic
steps author and artist*

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*Matt Pearson followed to
create each unique piece
using the Processing
programming language.
About the Technology
Artists have always
explored new media, and*

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computer-based artists are no exception. Generative art, a technique where the artist creates print or onscreen images by using computer algorithms, finds the artistic intersection

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*of programming, computer
graphics, and individual
expression. The book
includes a tutorial on
Processing, an open source
programming language and
environment for people who*

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*want to create images,
animations, and
interactions. About the
Book Generative Art
presents both the
techniques and the beauty
of algorithmic art. In it,*

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you'll find dozens of high-quality examples of generative art, along with the specific steps the author followed to create each unique piece using the Processing programming

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language. The book includes concise tutorials for each of the technical components required to create the book's images, and it offers countless suggestions for how you

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*can combine and reuse the
various techniques to
create your own works.
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eBook from Manning. Also*

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*available is all code from
the book. What's Inside
The principles of
algorithmic art A
Processing language
tutorial Using organic,
pseudo-random, emergent,*

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and fractal processes =====

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of Contents Part 1

Creative Coding Generative

Art: In Theory and

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*Programming Language for
Artists Part 2 Randomness
and Noise The Wrong Way to
Draw A Line The Wrong Way
to Draw a Circle Adding
Dimensions Part 3
Complexity Emergence*

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Autonomy Fractals

Generative Design

*A Programming Handbook for
Visual Designers and
Artists*

The Nature of Code

Parametric Design for

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Architecture

*Complexism and Biology in
Generative Design*

An Introduction to

Programming and Computing

**Anyone can learn to program - and
this book is for everyone! Written for a**

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high school web development class and meant to be read by those with little to no programming experience, this coursebook aims to eliminate the fear that is often associated with learning how to program and make coding accessible, simple, and fun! Finally, a book on creative

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programming, written directly for artists and designers! Rather than following a computer science curriculum, this book is aimed at creatives who are working in the intersection of design, art, and education. In this book you'll learn to apply computation into the creative process by following a four-

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step process, and through this, land in the cross section of coding and art, with a focus on practical examples and relevant work structures. You'll follow a real-world use case of computation art and see how it relates back to the four key pillars, and addresses potential pitfalls and challenges in the

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creative process. All code examples are presented in a fully integrated Processing example library, making it easy for readers to get started. This unique and finely balanced approach between skill acquisition and the creative process and development makes Coding Art a functional

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reference book for both creative programming and the creative process for professors and students alike.

What You'll Learn Review ideas and approaches from creative programming to different professional domains Work with computational tools like the Processing language

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Understand the skills needed to move from static elements to animation to interaction Use interactivity as input to bring creative concepts closer to refinement and depth Simplify and extend the design of aesthetics, rhythms, and smoothness with data structures Leverage the diversity of art

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code on other platforms like the web or mobile applications Understand the end-to-end process of computation art through real world use cases Study best practices, common pitfalls, and challenges of the creative process
Who This Book Is For Those looking to see what computation and data can do

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for their creative expression; learners who want to integrate computation and data into their practices in different perspectives; and those who already know how to program, seeking creativity and inspiration in the context of computation and data.

Architects use CAD to help them

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visualize their ideas. Parametric design is a fast-growing development of CAD that lets architects and designers specify the key parameters of their model and make changes interactively. Whenever changes are made the rest of the model updates automatically. Through a detailed

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description of various parametric, generative and algorithmic techniques, this book provides a practical guide to generating geometric and topological solutions for various situations, including explicit step-by-step tutorials. While the techniques and algorithms can be generalized to suit to any

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parametric environment, the book illustrates its concepts using the scripting languages of one of the most powerful 3D visualization and animation design software systems (Autodesk 3ds Max MAXScript), one of the most popular open-source Java-based scripting environments

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(Processing), and a brand new language specifically tailored for parametric and generative design (Autodesk DesignScript). This clear, accessible book will have a wide appeal to students and practitioners who would like to experiment with parametric techniques.

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First Processing book on the market
Processing is a nascent technology
rapidly increasing in popularity Links
with the creators of Processing will
help sell the book

The Computational Beauty of Nature
Introduction to Javascript
The Printer as Designer and

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Craftsman 1700-1914

Creating Procedural Artworks with
Processing

Maeda @ Media

Coding Art

Generating form is one of the
most fundamental aspects of

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architectural education and practice. While new computational tools are enabling ever more unpredictable forms, critics argue that this leads to a disconnection between architectural output and its

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context. This attractive, pocket-sized book uses 11 different architectural projects to explore how generative design processes can integrate digital as well as physical design tools and techniques to produce

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innovative forms that cohere with structural and material principles, performance and context.

Illustrated with drawings, computer images and models, this stimulating, accessible handbook of ideas provides a

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guide for students as well as an
inspiration for practising
architects.

A completely revised edition,
offering new design recipes for
interactive programs and support
for images as plain values,

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testing, event-driven programming, and even distributed programming. This introduction to programming places computer science at the core of a liberal arts education. Unlike other introductory books,

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it focuses on the program design process, presenting program design guidelines that show the reader how to analyze a problem statement, how to formulate concise goals, how to make up examples, how to develop an

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outline of the solution, how to finish the program, and how to test it. Because learning to design programs is about the study of principles and the acquisition of transferable skills, the text does not use an off-the-

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shelf industrial language but presents a tailor-made teaching language. For the same reason, it offers DrRacket, a programming environment for novices that supports playful, feedback-oriented learning. The

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environment grows with readers as they master the material in the book until it supports a full-fledged language for the whole spectrum of programming tasks. This second edition has been completely revised. While the

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book continues to teach a systematic approach to program design, the second edition introduces different design recipes for interactive programs with graphical interfaces and batch programs. It also enriches

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its design recipes for functions with numerous new hints. Finally, the teaching languages and their IDE now come with support for images as plain values, testing, event-driven programming, and even distributed programming.

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Prepare yourself: How things are made is changing. The digital and physical are uniting, from innovative methods to sense and understand our world to machines that learn and design in ways no human ever could;

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from 3D printing to materials with properties that literally stretch possibility; from objects that evolve to systems that police themselves. The results will radically change our world--and ourselves. The Future of Making

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illustrates these transformations, showcasing stories and images of people and ideas at the forefront of this radical wave of innovation. Designers, architects, builders, thought leaders--creators of all

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kinds--have contributed to this look at the materials, connections, and inventions that will define tomorrow. But this book doesn't just catalog the future; it lays down guidelines to follow, new rules for how things

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are created, that make it the ultimate handbook for anyone who wants to embrace the true future of making.

Why does the word design owe its origin to Latin and not Greek roots? Where do the limits of the

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human mind lie? How does ambiguity enter the deterministic world of computation? Who was Parmenides and why is his philosophy still puzzling today? This unique volume challenges the reader to tackle all these

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complex questions and more.

Algorithmic Architecture is not a typical theory-based architectural book; it is not a computer programming or language tutorial book either. It contains a series of provocative design projects,

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and yet it is not just a design or graphic art book per se.

Following the tradition of architecture as a conglomeration of various design fields - engineering, theory, art, and recently, computation - the

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challenge of this book is to present a concept that, like architecture, is a unifying theme for many diverse disciplines. An algorithm is not only a step-by-step problem-solving procedure, a series of lines of computer

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codes or a mechanistic linguistic expression, but is also an ontological construct with deep philosophical, social, design, and artistic repercussions.

Consequently, this book presents many, various and

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often seemingly disparate points
of view that lead to the
establishment of one common
theme; algorithmic architecture.
Processing, second edition
Code as Creative Medium
Now in Production

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Creative Coding and
Computational Art
Generative Programming
The Troubled History of
Computer Art

An essential guide for teaching and
learning computational art and

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design: exercises, assignments, interviews, and more than 170 illustrations of creative work. This book is an essential resource for art educators and practitioners who want to explore code as a creative medium, and serves as a guide for

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computer scientists transitioning from STEM to STEAM in their syllabi or practice. It provides a collection of classic creative coding prompts and assignments, accompanied by annotated examples of both classic and contemporary

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projects, and more than 170 illustrations of creative work, and features a set of interviews with leading educators. Picking up where standard programming guides leave off, the authors highlight alternative programming pedagogies suitable

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for the art- and design-oriented classroom, including teaching approaches, resources, and community support structures.

Processing: Creative Coding and Generative Art in Processing 2 is a fun and creative approach to

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learning programming. Using the easy to learn Processing programming language, you will quickly learn how to draw with code, and from there move to animating in 2D and 3D. These basics will then open up a whole

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world of graphics and computer entertainment. If you've been curious about coding, but the thought of it also makes you nervous, this book is for you; if you consider yourself a creative person, maybe worried programming is too

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non-creative, this book is also for you; if you want to learn about the latest Processing 2.0 language release and also start making beautiful code art, this book is also definitely for you. You will learn how to develop interactive

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simulations, create beautiful visualizations, and even code image-manipulation applications. All this is taught using hands-on creative coding projects. Processing 2.0 is the latest release of the open-source Processing language, and includes

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exciting new features, such as
OpenGL 2 support for enhanced 3D
graphics performance. Processing:
Creative Coding and Generative Art
in Processing 2 is designed for
independent learning and also as a
primary text for an introductory

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computing class. Based on research funded by the National Science Foundation, this book brings together some of the most engaging and successful approaches from the digital arts and computer science classrooms. Teaches you how to

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program using a fun and creative approach. Covers the latest release of the Processing 2.0 language. Presents a research based approach to learning computing. In April 1991 BusinessWeek ran a cover story entitled, "I Can't

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Work This ?#!@ Thing, about the difficulties many people have with consumer products, such as cell phones and VCRs. More than 15 years later, the situation is much the same"-but at a very different level of scale. The disconnect between

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people and technology has had society-wide consequences in the large-scale system accidents from major human error, such as those at Three Mile Island and in Chernobyl. To prevent both the individually annoying and nationally significant

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consequences, human capabilities and needs must be considered early and throughout system design and development. One challenge for such consideration has been providing the background and data needed for the seamless integration

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of humans into the design process from various perspectives: human factors engineering, manpower, personnel, training, safety and health, and, in the military, habitability and survivability. This collection of development activities

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has come to be called human-system integration (HSI). Human-System Integration in the System Development Process reviews in detail more than 20 categories of HSI methods to provide invaluable guidance and information for system

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Creating Procedural Artworks with Processing - A Holistic Guide, is for those seeking to learn computer programming from the very basics to the more advanced concepts. It uses the Processing language

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(processing.org) to visualise the concepts through the production of computer graphics that illustrate the coding principles while being artworks in their own right. This book started as a set of tutorials for university level multimedia students

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to introduce them to computer programming through the development of artworks. It's therefore presented in a non-threatening way that will ease the reader into programming. This book has been written for absolute

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beginners who want to learn to program. It approaches coding through a unique combination of teaching programming while keeping in mind the principles of design and mathematics. All these elements are essential in a global

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economy filled with electronic interactive experiences and virtual reality. The chapters are organised to weave together programming functionality and design principles presenting one concept at a time, with multiple hands on exercises in

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each chapter. Special features include: * 10 chapters building on each other one concept at a time. * 20 practical laboratories for exploring digital art and programming concepts. * Over 35 detailed step by step hands on

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activities. * Over 95 questions to test your understanding. * Answers to all exercises and questions. For more information visit: <http://holistic3d.com/creating-procedural-artworks/> Experience Processing in action at

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<http://holistic3d.com/processing>

A Handbook of Software Studies

Graphic Design Before Graphic
Designers

Algorithms As Artistic Tool

A New Look

3D-Printed Body Architecture

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Interactive Installations and
Experiences

*Presents a comprehensive
history of graphic design and
printing, from 1700 to 1914.*

*Generative art is the art of
the algorithm where artists*

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must carefully design the nature of their work, and then implement it as a computer program. In the book, J.R. Parker presents computer programming concepts and generative art

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*principles as a way to create
algorithmic computer art
using art and design best
practices. In addition,
readers have access to
program codes and video
tutorials through the book's*

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*web site at <http://genart.ca>.
Gary William Flake develops
in depth the simple idea that
recurrent rules can produce
rich and complicated
behaviors. In this book Gary
William Flake develops in*

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depth the simple idea that recurrent rules can produce rich and complicated behaviors. Distinguishing "agents" (e.g., molecules, cells, animals, and species) from their interactions (e.g.,

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chemical reactions, immune system responses, sexual reproduction, and evolution), Flake argues that it is the computational properties of interactions that account for much of what we think of as

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*"beautiful" and "interesting."
From this basic thesis, Flake
explores what he considers
to be today's four most
interesting computational
topics: fractals, chaos,
complex systems, and*

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adaptation. Each of the book's parts can be read independently, enabling even the casual reader to understand and work with the basic equations and programs. Yet the parts are

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*bound together by the
theme of the computer as a
laboratory and a metaphor
for understanding the
universe. The inspired reader
will experiment further with
the ideas presented to*

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*create fractal landscapes,
chaotic systems, artificial life
forms, genetic algorithms,
and artificial neural
networks.*

*Today's designers are
creating compelling*

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atmospheres and interactive experiences by merging hardware and software with architecture and design. This book is a collection of this innovative work produced where virtual realms meet

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*the real world and where
dataflow confronts the
human senses. It presents
an international spectrum of
interdisciplinary projects at
the intersection of
laboratory, trade show, and*

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*urban space that play with
the new frontiers of
perception, interaction, and
staging created by current
technology. The work reveals
how technology is
fundamentally changing and*

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*expanding strategies for the
targeted use of architecture,
art, communication, and
design for the future.*

*Visualize, Program, and
Create with Processing*

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*Toward a Living
Architecture?*

*The New Mathematics of
Architecture*

*Computer Explorations of
Fractals, Chaos, Complex
Systems, and Adaptation*

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The Age of Data

A compendium for everybody who is interested in what art will be like in the upcoming decade: Global pioneers of data-driven design share their projects and give behind-the-scene looks at some of the most genre-redefining work, providing insights and outlooks on how

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it influences our current and future reality.

A single line of code offers a way to understand the cultural context of computing. This book takes a single line of code—the extremely concise BASIC program for the Commodore 64 inscribed in the title—and uses it as a

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lens through which to consider the phenomenon of creative computing and the way computer programs exist in culture. The authors of this collaboratively written book treat code not as merely functional but as a text—in the case of 10 PRINT, a text that appeared in many different printed

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sources—that yields a story about its making, its purpose, its assumptions, and more. They consider randomness and regularity in computing and art, the maze in culture, the popular BASIC programming language, and the highly influential Commodore 64 computer. How can we capture the unpredictable

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evolutionary and emergent properties of nature in software? How can understanding the mathematical principles behind our physical world help us to create digital worlds? This book focuses on a range of programming strategies and techniques behind computer simulations of natural

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systems, from elementary concepts in mathematics and physics to more advanced algorithms that enable sophisticated visual results. Readers will progress from building a basic physics engine to creating intelligent moving objects and complex systems, setting the foundation for further experiments in

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generative design. Subjects covered include forces, trigonometry, fractals, cellular automata, self-organization, and genetic algorithms. The book's examples are written in Processing, an open-source language and development environment built on top of the Java programming language. On the book's

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website ([http:](http://www.natureofcode.com)

[//www.natureofcode.com](http://www.natureofcode.com)), the examples run in the browser via Processing's JavaScript mode.

A Gentle Introduction to Creative Coding with P5js. A fun step-by-step gentle introduction to creating digital art with computers, designed especially

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for: artists new to coding art, design and digital media students, technologists wanted to explore their creativity teachers and parents seeking more visual and exciting approaches to teaching computer science Starting from the very basics, we'll learn to: understand how computers create

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digital images code with a popular computer language designed for artists, called Processing, enabled for the web with p5js develop and appreciate algorithms, mathematical recipes, which can create surprisingly beautiful art easily share your code and art on the web, potentially reaching an audience of

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billions of internet users We'll discover and practice basic computer graphics techniques, explore simple algorithms that create interesting visual forms, and work through example projects to experience the process of developing algorithmic art from inspiration, through problem solving, to final

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refinement. By the end of the course, you will be coding confidently, appreciating the beauty of mathematics and wanting to explore more advanced ideas and methods.

Algorithmic Architecture

Morphing

A Handbook for Computational Art

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Topology Optimization
Processing

A practical guide using Processing
*The new edition of an introduction to
computer programming within the
context of the visual arts, using the*

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*open-source programming language
Processing; thoroughly updated
throughout. The visual arts are rapidly
changing as media moves into the web,
mobile devices, and architecture.
When designers and artists learn the
basics of writing software, they*

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develop a new form of literacy that enables them to create new media for the present, and to imagine future media that are beyond the capacities of current software tools. This book introduces this new literacy by teaching computer programming

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within the context of the visual arts. It offers a comprehensive reference and text for Processing (www.processing.org), an open-source programming language that can be used by students, artists, designers, architects, researchers, and anyone

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who wants to program images, animation, and interactivity. Written by Processing's cofounders, the book offers a definitive reference for students and professionals. Tutorial chapters make up the bulk of the book; advanced professional projects from

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such domains as animation, performance, and installation are discussed in interviews with their creators. This second edition has been thoroughly updated. It is the first book to offer in-depth coverage of Processing 2.0 and 3.0, and all

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examples have been updated for the new syntax. Every chapter has been revised, and new chapters introduce new ways to work with data and geometry. New “synthesis” chapters offer discussion and worked examples of such topics as sketching with code,

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modularity, and algorithms. New interviews have been added that cover a wider range of projects. “Extension” chapters are now offered online so they can be updated to keep pace with technological developments in such fields as computer vision and

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*electronics. Interviews SUE.C, Larry
Cuba, Mark Hansen, Lynn Hershman
Leeson, Jürg Lehni, LettError, Golan
Levin and Zachary Lieberman,
Benjamin Maus, Manfred Mohr, Ash
Nehru, Josh On, Bob Sabiston,
Jennifer Steinkamp, Jared Tarbell,*

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Steph Thirion, Robert Winter

The book explores the technical as well as cultural imaginaries of programming from its insides, demonstrating the reflexive practice of aesthetic programming, to understand and question existing

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technological objects and paradigms.

"John Maeda deconstructs the digital world with the earned authority of an M.I.T.-trained computer scientist and a card-carrying artist. Being ambidextrous with Eastern and Western cultures, he can see things

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most of us overlook. The result is a humor and expression that brings out the best in computers and art."--Nicholas Negroponte John Maeda is one of the world's leading experimental graphic designers and is quickly becoming a digital culture

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icon. His early preoccupation with the intersection of computer programming and digital art has resulted in a fascinating, interactive, and stunningly beautiful collection of work. Maeda has pioneered many of the key expressive elements that are

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prevalent on the web today. Among his most well-known works are The Reactive Square, which features a simple black square on a computer screen that changes shape if one yells at it, and Time Paint, in which paint flies across the screen. He has created

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innovative, interactive calendars, digital services, and advertisements for companies such as Sony, Shiseido, and Absolut Vodka. This is the first publication to present a complete overview of Maeda's work and philosophy. A glorious visual

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exploration of ideas and graphic form, Maeda @ Media takes you through Maeda's beginnings in early computerized printouts, to his reactive graphics on CD-ROM, to his dynamic experiments on the web, to his pedagogical approach to digital visual

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art, and finally to his overarching quest to understand the very nature of the relationship between technology and creativity. Six thematic chapters provide an overview of his entire career and research. But this is not just a catalog of older work:

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interspersed between each chapter is a new visual essay that has been created exclusively for this publication to underline each of the major themes. Coming together in a massive 480 pages, printed in a dazzling array of color combinations on three different

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kinds of paper, the result is a manifesto, a finely crafted manual and inspiration sourcebook all in one. With over 1000 illustrations. Some architects dream of 3D-printing houses. Some even fantasise about 3D-printing entire cities. But what is the

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real potential of 3D printing for architects? This issue focuses on another strand of 3D-printing practice emerging among architects operating at a much smaller scale that is potentially more significant. Several architects have been working with the

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fashion industry to produce some exquisitely designed 3D-printed wearables. Other architects have been 3D-printing food, jewellery and other items at the scale of the human body. But what is the significance of this work? And how do these 3D-printed

body-scale items relate to the discipline of architecture? Are they merely a distraction from the real business of the architect? Or do they point towards a new form of proto-architecture – like furniture, espresso makers and pavilions before them – that tests out

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*architectural ideas and explores
tectonic properties at a smaller scale?
Or does this work constitute an entirely
new arena of design? In other words,
is 3D printing at the human scale to be
seen as a new genre of 'body
architecture'? This issue contains some*

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of the most exciting work in this field today, and seeks to chart and analyse its significance. Contributors include: Paola Antonelli/MoMA, Francis Bitonti, Niccolo Casas, Behnaz Farahi, Madeline Gannon, Eric Goldemberg/MONAD Studio, Kyle von

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*Hasseln/3D Systems Culinary Lab,
Rem D Koolhaas, Julia Körner, Neil
Leach, Steven Ma/Xuberance, Neri
Oxman/MIT Media Lab, Ronald Rael
and Virginia San Fratello, Gilles
Retsin, Jessica Rosenkrantz/Nervous
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AAD Algorithms-Aided Design.

***Parametric Strategies Using
Grasshopper***

A Touch of Code

***This book has grown out of lectures
and courses given at Linköping
University, Sweden, over a period of***

15 years. It gives an introductory treatment of problems and methods of structural optimization. The three basic classes of geometrical - timization problems of mechanical structures, i. e. , size, shape and topology op- mization, are treated. The focus is on concrete numerical

***solution methods for d-crete and
(?nite element) discretized linear
elastic structures. The style is
explicit and practical: mathematical
proofs are provided when
arguments can be kept e-mentary
but are otherwise only cited, while
implementation details are***

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frequently provided. Moreover, since the text has an emphasis on geometrical design problems, where the design is represented by continuously varying—frequently very many— variables, so-called first order methods are central to the treatment. These methods are

***based on sensitivity analysis, i. e. ,
on establishing first order
derivatives for objectives and
constraints. The classical first order
methods that we emphasize are
CONLIN and MMA, which are based
on explicit, convex and separable
approximations. It should be***

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remarked that the classical and frequently used so-called optimality criteria method is also of this kind. It may also be noted in this context that zero order methods such as response surface methods, surrogate models, neural networks, genetic algorithms, etc. , essentially

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apply to different types of problems than the ones treated here and should be presented elsewhere.

Generative design is a revolutionary new method of creating artwork, models, and animations from sets of rules, or algorithms. By using accessible programming languages

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such as Processing, artists and designers are producing extravagant, crystalline structures that can form the basis of anything from patterned textiles and typography to lighting, scientific diagrams, sculptures, films, and even fantastical buildings. Opening

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with a gallery of thirty-five illustrated case studies, Generative Design takes users through specific, practical instructions on how to create their own visual experiments by combining simple-to-use programming codes with basic design principles. A detailed

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handbook of advanced strategies provides visual artists with all the tools to achieve proficiency. Both a how-to manual and a showcase for recent work in this exciting new field, Generative Design is the definitive study and reference book that designers have been waiting

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Considering how culturally indispensable digital technology is today, it is ironic that computer-generated art was attacked when it burst onto the scene in the early 1960s. In fact, no other twentieth-century art form has elicited such a

negative and hostile response.

***When the Machine Made Art
examines the cultural and critical
response to computer art, or what
we refer to today as digital art.***

***Tracing the heated debates between
art and science, the societal anxiety
over nascent computer technology,***

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and the myths and philosophies surrounding digital computation, Taylor is able to identify the destabilizing forces that shape and eventually fragment the computer art movement.

Features forty-six projects that showcase how recent

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***developments in math and physics
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delightful anytime book with
hours of
entertainment”—Booklist

With P5. Js

A Holistic Guide

Human-System Integration in the
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