

The IPOL journal: a new publication way for reproducible research

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Pour une Recherche Reproducible Webinar
Grenoble



Outline

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 - ▶ 1.1 Reproducible research
 - ▶ 1.2 Origin of the IPOL journal
- ▶ 2. Principle and current form
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 - ▶ 2.2 Current form
- ▶ 3. Impact of the IPOL journal
 - ▶ 3.1 Some statistics
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- ▶ 4. Evolution of IPOL
 - ▶ 4.1 New demo system architecture
- ▶ 4. Conclusion

1.1 Reproducible research (1)

Reproducible research in Science

- ▶ *Theoretical sciences* have proofs,

$$\begin{aligned}
 cPCT) &= 2a + c(Ta^2) + c(Ta^2) + c(Ta^2) + c(Ta^2) \dots \text{etc} \\
 &= 2a + 2aTa^2 + 2aTa^2 + 2aTa^2 + 2aTa^2 \dots \text{etc} \\
 cPCT) &= 2a + 2a^3 + 2a^3 + 2a^3 + 2a^3 + \dots + 2a^3 \\
 &= 2a(1 + a^2 + a^2 + a^2 + a^2 + \dots) = 2a \sum_{n=0}^{\infty} a^{2n}
 \end{aligned}$$

The recursive equation above then leads us to the summation equation

Since we know the converging infinite geometric series states:

$$\sum_{n=0}^{\infty} r^n = \frac{1}{1-r} \quad \text{if } |r| < 1$$

This in turn leads us to the closed form formula:

$$2a \sum_{n=0}^{\infty} a^{2n} = 2a \cdot \frac{1}{1-a^2} = \frac{2a}{1-a^2}$$

Proof by induction: $2a \cdot T + c(Ta^2) = T \cdot \frac{2a}{1-a^2}$

Inductive hypothesis: $cPCT) = \frac{2a}{1-a^2} \quad \forall i < K$

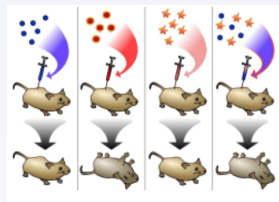
Inductive Step:

$$\begin{aligned}
 cP(K) &= \frac{2a}{1-a^2} + \frac{2a}{1-a^2} \\
 2aK &= \frac{2a}{1-a^2} + \frac{2a}{1-a^2} \\
 2aK &= \frac{2a(1-a^2) + 2a(1-a^2)}{(1-a^2)^2} = \frac{4a(1-a^2)}{(1-a^2)^2} \\
 2aK &= \frac{4a}{1-a^2} = \frac{2a}{1-a^2} + \frac{2a}{1-a^2}
 \end{aligned}$$

1.1 Reproducible research (1)

Reproducible research in Science

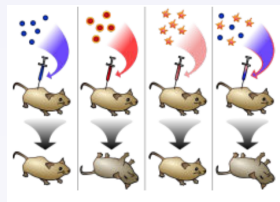
- ▶ *Theoretical sciences* have proofs,
- ▶ *Experimental sciences* have procedures.



1.1 Reproducible research (1)

Reproducible research in Science

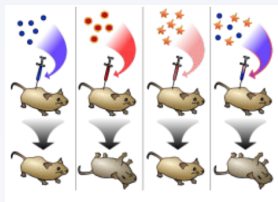
- ▶ *Theoretical sciences* have proofs,
- ▶ *Experimental sciences* have procedures.
- ▶ *Computer science?*



1.1 Reproducible research (1)

Reproducible research in Science

- ▶ *Theoretical sciences* have proofs,
- ▶ *Experimental sciences* have procedures.
- ▶ *Computer science?*



Computer science:

- ▶ Descriptions of methods/algorithms
- ▶ Descriptions usually short (number of pages limited!)
- ▶ Parameters not always given or properly described
- ▶ Pre/post processing steps might have been omitted

1.1 Reproducible research (2)

Computer science

- 1 New idea
- 2 Demonstration, implementation



1.1 Reproducible research (2)

Computer science

- 1 New idea
- 2 Demonstration, implementation
- 3 Publication of an article

Nouvelle
idée



Fast Polygonal Approximation of Digital Curves Using Relaxed Straightness Properties

Partha Bhownick and Bhargav D. Bhattacharya, Fellow, IEEE

Abstract—Since finding digital straight line segments (DSLS) through digital curves can be used to solve the digitization of analog curves, digital curve detection has been a prominent topic in computer graphics. These algorithms often involve a number of operations to test a given digital curve approximating a real straight line. Thus, a novel approach, which is fast and simple enough to be used in real-time applications, is proposed in this paper. The algorithm is based on the relaxed straightness property of approximate straightness introduced by relaxing certain conditions of DSLS. First, an algorithm is introduced to extract the straight segments from a digital curve. The number of such segments is reduced to a minimum by using a greedy algorithm based on the relaxed DSLS error. As a result, the data set required for representing a curve also reduces to a large extent. The generation of segments and further an enhancement to represent a digital curve using approximate straightness is also presented. The proposed algorithm is tested on various digital curves. The experimental results show that the proposed algorithm outperforms the existing algorithms in terms of execution time and accuracy. The experimental results on various digital curves demonstrate the speed, accuracy, and efficiency of the proposed method.

Index Terms—Digital geometry, digital straight line, polygonal approximation, shape analysis.

1. INTRODUCTION

The representation of lines and curves in the digital domain has been an active subject of research for nearly half a century [1], [2], [3]. In particular, digital straight line segments (DSLS) have drawn special attention for their challenging nature from the view point of theoretical formulation as well as for practical applications in image analysis and computer graphics. In a digital image containing straight lines which are likely to be straight edges, the use of such lines for DSLS captures a strong geometric property and is useful for shape abstraction of the underlying object as for finding the straightness among several lines.

The necessary and sufficient conditions for a digital/ analog curve (DC) to be a DSLS have been stated in the literature in various forms [2], [4], [5], [6], [7]. It has been shown that a DC is the digitization of a straight line segment if and only if it has the chord property. A DC that has the chord property for every $(i, j) \in \mathbb{Z}^2$ and $i \neq j$ is the straight line in the real plane, $\text{strajng}(\text{and}, i, j)$. The term "DC", which, in this sense, means that, for any point $(i, j) \in \mathbb{Z}^2$, there

exists some point (i', j') of each that $\text{near}(i', j', i, j) \in \mathbb{Z}^2$.

A few other definitions related to this work are given below. Chm. Cch. If $(i, j) \in \mathbb{Z}^2$ is a grid point, then the grid point (i', j') is a neighbor of (i, j) provided that $\text{near}(i', j', i, j) = 1$. The chord code $\text{CC}(i, j)$ of (i, j) with respect to the neighborhood near of point (i, j) is a vector (i', j', \dots, i', j') as shown in Fig. 1.

Digital Curve (DC). A DC \mathcal{C} is an ordered sequence of grid points representable by their coded sets such that every point in the sequence near (Fig. 1), is in \mathcal{C} and

for every point $(i, j) \in \mathbb{Z}^2$ such that $\text{near}(i, j, i, j) = 1$, there exists a point $(i', j') \in \mathcal{C}$ such that $\text{near}(i', j', i, j) = 1$. The term "DC" is used to be inclusive of all sets of the sequence of any grid point of \mathbb{Z}^2 (including \mathbb{Z}^2 itself). Also, in [8], [9], [10], [11], [12], [13], [14], [15], [16], [17], [18], [19], [20], [21], [22], [23], [24], [25], [26], [27], [28], [29], [30], [31], [32], [33], [34], [35], [36], [37], [38], [39], [40], [41], [42], [43], [44], [45], [46], [47], [48], [49], [50], [51], [52], [53], [54], [55], [56], [57], [58], [59], [60], [61], [62], [63], [64], [65], [66], [67], [68], [69], [70], [71], [72], [73], [74], [75], [76], [77], [78], [79], [80], [81], [82], [83], [84], [85], [86], [87], [88], [89], [90], [91], [92], [93], [94], [95], [96], [97], [98], [99], [100].

Several interesting problems and properties related to digital straight lines and curves (DSLS) have been studied by various authors [2], [4], [5], [6], [7]. Many attributes of DSLS can be interpreted in terms of fundamental functions [24], [25], [26]. The most fundamental problem, which is highly relevant to various applications in general, and to curve approximation in particular, is to ascertain whether or not a given DC is a DSLS. Many solutions to this problem have been proposed as the literature [11], [12], [13], [14], [15], [16], [17], [18], [19].

The proposed work introduces a new concept of approximate digital straight line segments (ADSL) by providing

¹ The authors "DC", "DSLS", and "ADSL" have been used in this paper to refer to digital and grid points. According to the literature.

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1.1 Reproducible research (2)

Computer science

- 1 New idea
- 2 Demonstration, implementation
- 3 Publication of an article

Scientific reuse

- 1 Scientifically interesting article
- 2 Reimplement the algorithm
- 3 Matching the results with the ones published in the original work

Nouvelle
idéeFast Polygonal Approximation of Digital Curves
Using Relaxed Straightness Properties

Partha Bhownick and Bhargab D. Bhattacharya, IJCEE

Abstract—Recent scientific digital image processing algorithms continue to advance by approximating digital curves using polygonal approximations. However, the current practice of approximating digital curves using a fixed number of segments is not a general digital curve approximating method. This paper suggests which set of digital curves can be approximated by a fixed number of segments. It is shown that a digital curve can be approximated by a fixed number of segments if and only if it is a relaxed straightness property. The number of such segments required to approximate a digital curve is also determined. The number of such segments required to approximate a digital curve is also determined. The number of such segments required to approximate a digital curve is also determined.

Index Terms—Digital geometry, digital straight line, polygonal approximation, shape analysis.

1. INTRODUCTION

The representation of lines and curves in the digital plane has been an active subject of research for nearly half a century [1], [2], [3]. In particular, digital straight line segments (DSL) have drawn special attention for their challenging nature from the view point of theoretical formulation as well as their potential applications in image analysis and computer graphics. In a digital image containing straight lines which exhibit straight edges, the use of such segments is very useful. DSL captures a strong geometric property and for shape abstraction of the underlying object as well as for finding the resemblance among several objects.

The necessary and sufficient conditions for a digital/straight curve (DC) to be a DSL have been stated in the literature in various forms [1], [2], [3], [4], [5]. It has been shown that a DC is the digitization of a straight line segment if and only if it has the relaxed property. A DC has the relaxed property if for every $(i, j) \in C$, $(i, j) \in C$ and the segment ij is in the real plane, giving $ij \cap C = \emptyset$, which, in other words, means that, for each point $(i, j) \in C$, there

exists some point (i', j') of C such that $\text{max}(|i - i'|, |j - j'|) = 1$. A few other definitions related to the work are given below. Chen and Chou [6] define a point (i, j) in a grid plane, then the grid point (i', j') is a neighbor of (i, j) provided that $\text{max}(|i - i'|, |j - j'|) = 1$. The closed neighborhood of (i, j) with respect to the neighborhood of point (i, j) is denoted by $N_1(i, j)$, as shown in Fig. 1.

Digital Curve (DC), A DC is an ordered sequence of points representable by their coded work that each involving the first one in C is a neighbor of the preceding in the sequence (see Figs. 1(a) and 1(b)).

Intersecting Digital Curve, A DC is said to be intersecting if the segment of any grid point (i, j) is not intersected by any other DC. A DC is said to be non-intersecting if the segment of any grid point (i, j) is not intersected by any other DC. A DC is said to be non-intersecting if the segment of any grid point (i, j) is not intersected by any other DC.

Several interesting problems and properties related to digital straight lines and curves have been studied by various authors [1], [2], [3], [4]. Many attributes of DSL are being investigated in various papers. It is highly relevant to explore, associated to general and to real approximations in particular, is to examine whether or not a given DC is a DSL. Many solutions to this problem have been reported in the literature [1], [2], [3], [4], [5], [6], [7].

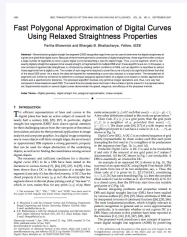
The proposed work introduces a new concept of approximate digital straight line segments (ADSL) by providing the definition and algorithm. In this paper, we are not interested in the

Résultats
identiques à
l'article ?

1.1 Reproducible research (3)

Typical difficulties

- ▶ **Code might not be available** (or perhaps not peer reviewed)
- ▶ **Data might not be available** (not FAIR: Findable, Accessible, Interoperable, Reusable)
- ▶ **Not detailed enough descriptions** in the article: impossible to obtain an equivalent implementation



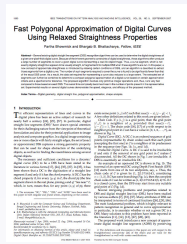
1.1 Reproducible research (3)

Typical difficulties

- ▶ **Code might not be available** (or perhaps not peer reviewed)
- ▶ **Data might not be available** (not FAIR: Findable, Accessible, Interoperable, Reusable)
- ▶ **Not detailed enough descriptions** in the article: impossible to obtain an equivalent implementation

Consequences

- ▶ Hard or impossible to compare
- ▶ Limits the diffusion of research
- ▶ Might a waste of time for the reader



1.1 Reproducible research (4)

Distribution of code and data

- ▶ ⊕ Added value to the publication
- ▶ ⊕ Increases the impact, since it allows for easy comparison
- ▶ ⊖ Software not really given the value it deserves (2022: CNRS is changing this! :)
- ▶ ⊖ Important effort (documentation, tests, maintenance)

```

#include <iostream>
#include "CGAL/Shape/Convex.N"
#include "CGAL/Int/readers/IntReader.N"
#include "CGAL/Int/IntImage.N"

#include "CGAL/Int/FromIntToBboxToBboxToImage2DModifier.N"
#include "CGAL/Int/Image/ImageSelector.N"
#include "CGAL/Int/Image/ImageSelector2DTo3DFromImage.N"
#include "CGAL/Int/Int/IntImage.N"
#include "Config/Examples.N"

using namespace std;
using namespace CGAL;
using namespace ZSI;

int main( int /*argc*/, char** /*argv*/ )
{
  std::string inputFilename = examplePath + "example1.100.vol";
  // [ExampleDisplay3D.cpp]
  Display3D<Convex, KSpace> cube;
  ImageSelector imageSelector = ZSI::ImageSelector( image );
  Image image = ImageSelector( image );
  ZSI::DigitalSet set3( image, image );
  SetFromImage2DTo3D imageSet( image );

  viewer << set3;
  viewer << "cube100x100x100.off";
  // [ExampleDisplay3D.cpp]
}
return 0;

```


1.2 Origin of the IPOL journal

Origine

- ▶ **Started** around October **2009**.
- ▶ The initiative of the **Image Processing group** at CMLA, ENS Cachan. Now: Centre Borelli.
- ▶ **First article** published in **2010**

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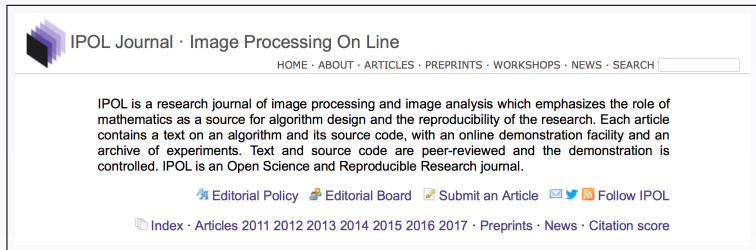
Motivation [Limare & Morel 2009]

- ▶ **Reproducible research.**
- ▶ **A new way of publishing: article + source code + data as a whole**, under the same DOI
- ▶ **Allow everybody to test the algorithms:**
⇒ **with their own data.**
- ▶ **Independent** from the **platform** (allow to test the methods without having to download the code or executing them locally)

2.1 Principles of the IPOL journal

Characteristics

- ▶ **Research journal on algorithms** (mainly images, video, 3D, audio, but also time series, or any other!)
- ▶ Each publication contains the description **of an algorithm** and also the actual **code source** and any **associated data**
- ▶ Also, every article is associated with an **online demo** and an **archive** of experiments by users
- ▶ **Strict peer review** of the **article's** text and also the **source code**
- ▶ An **Open Science** and **Reproducible Research** journal



The screenshot shows the IPOL Journal website. At the top left is the IPOL logo, a stylized 'I' made of overlapping blue and black squares. To its right is the text 'IPOL Journal · Image Processing On Line'. Below this is a navigation bar with links: 'HOME · ABOUT · ARTICLES · PREPRINTS · WORKSHOPS · NEWS · SEARCH' followed by a search input field. The main content area contains a paragraph: 'IPOL is a research journal of image processing and image analysis which emphasizes the role of mathematics as a source for algorithm design and the reproducibility of the research. Each article contains a text on an algorithm and its source code, with an online demonstration facility and an archive of experiments. Text and source code are peer-reviewed and the demonstration is controlled. IPOL is an Open Science and Reproducible Research journal.' Below the paragraph are social media and utility links: 'Editorial Policy', 'Editorial Board', 'Submit an Article', and 'Follow IPOL' with icons for Twitter and YouTube. At the bottom of the main content area are links for 'Index', 'Articles 2011 2012 2013 2014 2015 2016 2017', 'Preprints', 'News', and 'Citation score'.

2.1 Principles of the IPOL journal (2)

What IPOL is not:

- ▶ IPOL publishes **algorithms** and one **implementation**, not software
- ▶ IPOL is not a software library (like openCV and others)
- ▶ IPOL is not only a code diffusion platform

2.2 Current form

Contents of a typical publication:

- ▶ An online **PDF** of the article
- ▶ The **source code**
- ▶ The **data**

The screenshot shows a web browser window displaying the IPOL Journal website. The page title is "LSD: a Line Segment Detector" by Rafael Grompone von Gioi, Jérémie Jakubowicz, Jean-Michel Morel, and Gregory Randall. The page includes a navigation menu, a list of links (article, demo, archive), a publication date of 2012-03-24, and a reference to the journal "Processing On Line, 2 (2012), pp. 35–55". The abstract describes LSD as a linear-time Line Segment Detector. The page also features a download section with links for the full text manuscript (PDF, 1.3M) and source code (ZIP), and a preview section with a note about low-resolution images.

IPOL Journal · Image Processing On Line
HOME · ABOUT · ARTICLES · PREPRINTS · WORKSHOPS · NEWS · SEARCH

LSD: a Line Segment Detector

Rafael Grompone von Gioi, Jérémie Jakubowicz, Jean-Michel Morel, Gregory Randall

[article](#) [demo](#) [archive](#)

published · 2012-03-24 → BibTeX
reference · RAFAEL GROMPONE VON GIOI, JÉRÉMIE JAKUBOWICZ, JEAN-MICHEL MOREL, AND GREGORY RANDALL, LSD: a Line Segment Detector, Image Processing On Line, 2 (2012), pp. 35–55. <https://doi.org/10.5201/ipl.2012.gjmr-lsd>

Communicated by Lionel Moisan
Demo edited by Rafael Grompone

Abstract

LSD is a linear-time Line Segment Detector giving subpixel accurate results. It is designed to work on any digital image without parameter tuning. It controls its own number of false detections: On average, one false alarms is allowed per image. The method is based on Burns, Hanson, and Riseman's method, and uses an a-contrario validation approach according to Descolneux, Moisan, and Morel's theory. The version described here includes some further improvement over the one described in the original article.

Download

- full text manuscript: [PDF \(1.3M\)](#)
- source code: [ZIP](#)

Preview

Loading takes a few seconds. Images and graphics are degraded here for faster rendering. See the downloadable PDF documents for original high-quality versions.

LOW RESOLUTION PDF: Images may show compression artifacts. A full resolution PDF is available at www.ipol.im

2.2 Current form

Contents of a typical publication:

- ▶ An online **PDF** of the article
- ▶ The **source code**
- ▶ The **data**
- ▶ A **demo** (supplementary material)

The screenshot shows a web browser window with the URL `demo.ipol.im`. The page header includes the IPOL Journal logo and navigation links: HOME, ABOUT, ARTICLES, PREPRINTS, WORKSHOPS, NEWS, and SEARCH. The main title is "LSD: a Line Segment Detector". Below the title are three tabs: "article", "demo" (which is selected), and "archive". A light blue banner contains the text: "Please cite the reference article if you publish results obtained with this online demo." Underneath, there is a "Select Data" section with the instruction "Click on an image to use it as the algorithm input." This section displays four image thumbnails: "Chairs image" (a photograph of chairs), "Le Piree" (a photograph of a building), "LSD molecule" (a chemical structure diagram), and "Noise" (a grayscale noise pattern). Below this is an "Upload Data" section with the instruction "Upload your own image files to use as the algorithm input." It features a file input field with the text "input image Choisir le fichier aucun fichier sélé." and an "upload" button. At the bottom, there is a small disclaimer: "Images larger than 10000000 pixels will be resized. Upload size is limited to 286MB per image file and 10MB for the whole upload set. TIFF, JPEG, PNG, GIF, PNM (and other standard formats) are supported. The uploaded will be publicly archived unless you switch to private mode on the result page. Only upload suitable images. See the copyright and legal conditions for details."

2.2 Current form

Contents of a typical publication:

- ▶ An online **PDF** of the article
- ▶ The **source code**
- ▶ **The data**
- ▶ A **demo** (supplemental material)
- ▶ An **archive** of experiments (supplemental material)

The screenshot shows the website for LSD: A Line Segment Detector. The page title is "LSD: A Line Segment Detector" and it includes a navigation menu with "article", "demo", and "archive". Below the navigation, there is a section titled "Please cite the reference article if you publish results obtained with this online demo." followed by a paragraph of text: "2012 public archives of online experiments with original images since 2009/05/13 18:18. This archive is not moderated. In case you uploaded images that you don't want that appear in the archive, you can remove them by clicking on the corresponding key and then clicking over the 'delete this entry' button. This button appears only for the experiments performed by the user during the last 24 hours. In case of copyright infringement or similar problem, please contact us to request the removal of some images. Some archive content may be deleted by the editorial board for size matters, inadequate content, user requests, or other reasons." Below this text is a long list of image filenames, such as "page1... 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 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1409 1410 1411 [1412]

At the bottom of the page, there is a metadata section with the following information:

- key: DAA02567FAC80C8E958E7406E1A57
- date: 2017/10/16 05:41
- nd: Version 1.6 of November 11, 2011, compiled Nov 21 2015
- url version: 19-42-14
- run time: @TDH78194427

There are also several small thumbnail images displayed in a row at the bottom of the page.

Let's take a look!

2.2 Current form

As a typical journal, it has:

- ▶ Editorial board
- ▶ Articles, authors, editors
- ▶ Peer-review
- ▶ ISSN, DOI, SWHID
- ▶ Special editions (COVID, ...)
- ▶ Indexing metrics. Currently indexed by:
SCOPUS, *DBLP*, *Scirus*, *Google Scholar*, *DOAJ*, *SHERPA/RoMEO*, *Héloïse*, *WorldCat*, *CrossRef*, *Ulrich*, *Index Copernicus*, *PBN*, *JGate*, *VisionBib*, *CVonline*, *JournalSeek* and *NewJour*.

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Software aspects:

- ▶ Each article provides an **implementation**
- ▶ **Strict peer review** of the source code. Special focus on **reproducibility**.
- ▶ Reviewers: they **check** that the **pseudocode** and the **implementation match accurately!**

Software submission

A typical submission:

- ▶ **Languages:** C/C++, Python, Octave. Recently **with Docker: any language is possible**
- ▶ **Command line**, non interactive
- ▶ **FOSS license**
- ▶ **Copyright, patent**
- ▶ **Install** instructions, essential documentation (README.txt, ...)
- ▶ *Quality* **source code** with comments in English →” **EOSC report on quality research software**
- ▶ **Comments** for each function or any non-trivial parts of the code

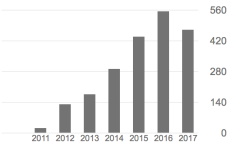
3. Some numbers

Some numbers:

- ▶ 121 articles published after 2010. 2022: around 200 published.
- ▶ 20 in peer-review. 2022: +60 with the ML-Briefs workshop.
- ▶ 2000+ citations (Google Scholar). 2022: 7621 citations.

Citée par

	Toutes	Depuis 2012
Citations	2102	2071
indice h	25	24
indice i10	45	44



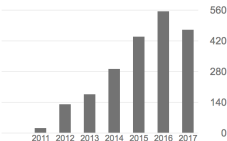
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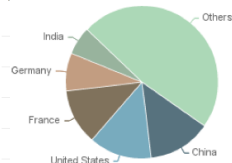
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- ▶ 2022: About 500,000 exps. in 400 demos. About 700 Gb in the archives.

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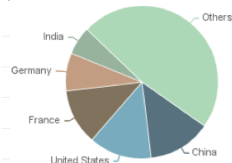
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Please cite the reference article if you publish results obtained with this online demo.

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 This archive is not moderated. In case you uploaded images that you don't want that appear in the archive, you can remove them by clicking on the corresponding key and then clicking over the "delete this entry" button.
 This button appears only for the experiments performed by the user during the last 24 hours.
 In case of copyright infringement or similar problem, please contact us to request the removal of some images. Some archived content may be deleted by the editorial board for size matters, inadequate content, user requests, or other reasons.

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 files output.txt output.eps output.svg

images



key 97ABDBE990E6ADEFE0BC19131320B124
 date 2017/10/16 05:43
 version 1.6 of November 11, 2011, compiled Nov 21 2015

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Go to the archives.

3. Impact of the journal

Impact of the online demos

- ▶ **Test immediately** without having to install anything, in any machine
- ▶ Encourages **comparing** the methods
- ▶ **Verify** the results claimed in the paper
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Impact of workshop demos

- ▶ Using the **online demos** as a **supplementary material** for a **3rd party publication**
- ▶ An online demo might **convince reviewers** about the method since they can **test by themselves** with **their own data**

4. Evolution of the journal

New mode **workshop demos** (since Spring 2014)

- ▶ Simple idea: creation of demos without associating them to an article
- ▶ **Objective: testing and dissemination. Not publications!**
- ▶ **Other uses:** using the demos as supplementary material or to show results in conferences

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New mo

- ▶ Sim
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2017: 46

Main im

- ▶ Aut
- ▶ Use
- ▶ Pos

The screenshot shows a web browser window with the URL `demo.ipol.im/demo/81/`. The page title is "IPOL Journal · Ball Pivoting Algorithm". The main heading is "IPOL Journal · Image Processing On Line" with a navigation menu: "HOME · ABOUT · ARTICLES · PREPRINTS · WORKSHOPS · NEWS · SEARCH". Below this is the "Ball Pivoting Algorithm" section with tabs for "article", "demo", and "archive". A light blue banner reads: "Please cite the reference article if you publish results obtained with this online demo." The "Upload Data" section contains instructions: "Upload your own pointset to use as the algorithm input. The uploaded text file should be formatted such that each line contains an oriented point with x, y, z, nx, ny, nz coordinates, separated by a tabulation. The uploaded file should be a gzipped ASCII file. Please do not omit the ".gz" file extension. The maximal size of the input point set is 150000 oriented points. If the point set is larger it will be randomly subsampled in this demo. If your data is bigger, you can download the source code. The uploaded point cloud will be scaled to fit in a cube of side 1." Below the text is an input field labeled "input pointset" with a dropdown menu "Choisir le fichier", the text "aucun fichier sél.", and an "upload" button. The "Use an example" section says "Click on an image to use the corresponding point set" and includes a notice: "Notice that for visualization reasons, all point clouds are normalized (scaled so that their maximum length is 1)." At the bottom, there are four images: two point cloud visualizations of a sphere, a silhouette of a rabbit, and a point cloud of a face.

Its in

les 2013]

4. Evolution

IPOL: Ball Pivoting Algorithm

demo.ipol.im/demo/81/result?key=D0DD2BA4C7F9A718B01EEFFA8E298BE5

ipol.im » pub » demo »

Ball Pivoting Algorithm

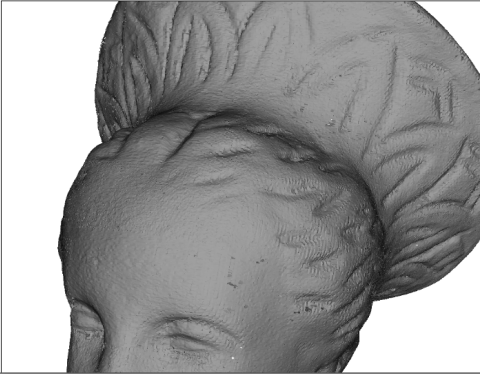
[article](#) | [demo](#) | [archive](#)

Restart with new input data, different parameter: [new input](#) | [different parameter](#)

Result

The algorithm (including file input and output) ran in 39.98 s, see the output log for timing details.
 Additional time was spent zipping the output file.
 Download the mesh result [output.ply.gz](#)

Mesh 3D visualization



New mo

- ▶ Sim
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Main impacts

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Short Time Fourier Transform


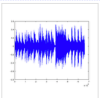
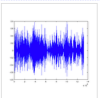
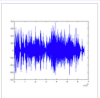


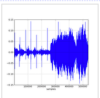
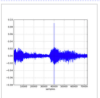
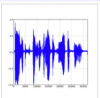
article demo archive

Please cite the reference article if you publish results obtained with this online demo.

Short Time Fourier Transform

Select Data

Click on an image to use the corresponding signal as input.

 Armstrong1	 Armstrong2	 RubenGonzalez1	 RubenGonzalez2	 Bird Signal
 Noise clicks	 Noise clicks	 Noise clicks	 Speech Signal	

Upload Data

Upload your own audio signals to use as the algorithm input.

input signal aucun fichier sél.

Upload size is limited to 30 seconds per signal file.
WAV (and other standard formats) are supported. The uploaded files may be re-used for further analysis.
Only upload suitable signals. See the copyright and legal conditions for details.

Its in

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4.1 New demo system architecture

Modular architecture:

- ▶ **Microservices** architecture
- ▶ Specialized **independent modules**

⇒ In production since 2016: <http://ipolcore.ipol.im/demo>

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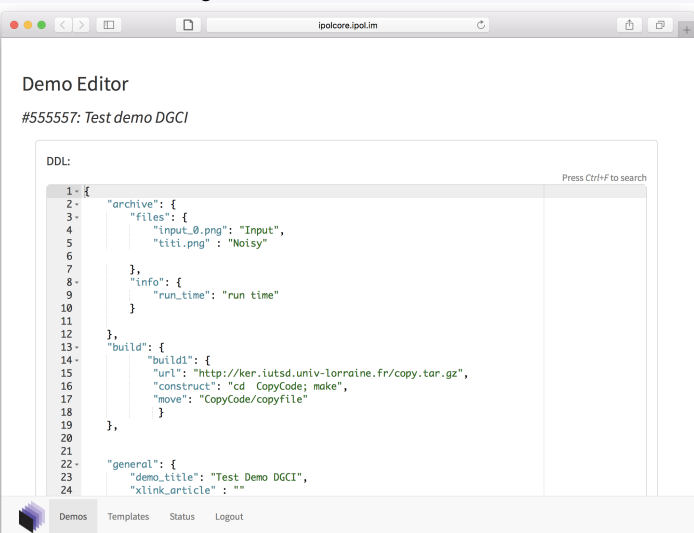
⇒ In production since 2016: <http://ipolcore.ipol.im/demo>

Demo generator from an structured textual description:

- ▶ A **demo** is **described** with an **text file** (title, type, parameter types and values, format of the results, ...).
- ▶ No need to code to build an online demo

4.1 New demo system architecture (2)

Editing a demo with the **Control Panel**:



The screenshot shows a web browser window titled "ipolcore.ipol.im" displaying the "Demo Editor" interface. The editor is editing a demo titled "#555557: Test demo DGCI". The main content area shows a JSON configuration for a Demo Definition Language (DDL) entry. The configuration includes an "archive" section with "files" (input_0.png: "Input", titi.png: "Noisy"), an "info" section with "run_time": "run time", a "build" section with "build1" (url: "http://ker.iutds.univ-lorraine.fr/copy.tar.gz", construct: "cd CopyCode; make", move: "CopyCode/copyfile"), and a "general" section with "demo_title": "Test Demo DGCI" and "xlink_article": "".

DDL:

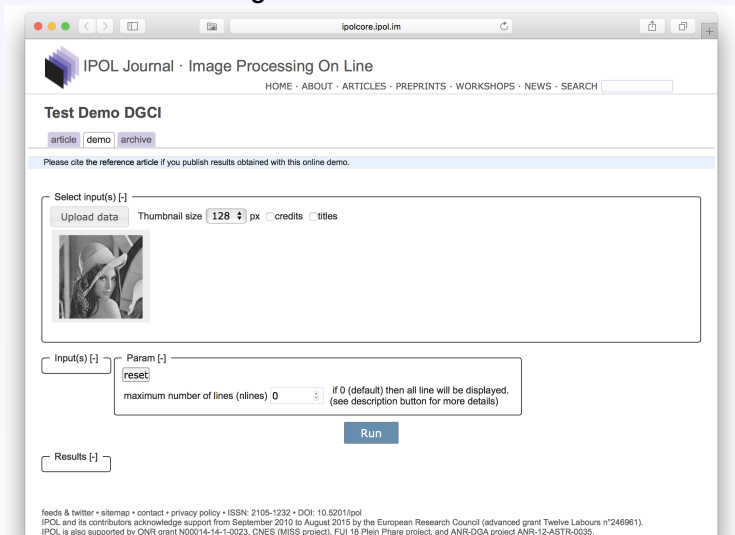
```
1 - {
2 -   "archive": {
3 -     "files": {
4 -       "input_0.png": "Input",
5 -       "titi.png": "Noisy"
6 -     },
7 -     "info": {
8 -       "run_time": "run time"
9 -     }
10 -  },
11 -  "build": {
12 -    "build1": {
13 -      "url": "http://ker.iutds.univ-lorraine.fr/copy.tar.gz",
14 -      "construct": "cd CopyCode; make",
15 -      "move": "CopyCode/copyfile"
16 -    }
17 -  },
18 -  "general": {
19 -    "demo_title": "Test Demo DGCI",
20 -    "xlink_article": ""
21 -  }
22 - }
```

Press Ctrl+F to search

Demos Templates Status Logout

4.1 New demo system architecture (2)

The **generated demo** interface:



The screenshot shows a web browser window with the URL `ipolcore.ipol.im`. The page header includes the IPOL logo and the text "IPOL Journal · Image Processing On Line". Navigation links for "HOME · ABOUT · ARTICLES · PREPRINTS · WORKSHOPS · NEWS · SEARCH" are present, along with a search input field.


Test Demo DGCI

Navigation tabs: [article](#) [demo](#) [archive](#)

Please cite the reference article if you publish results obtained with this online demo.

Select input(s) [-]

Upload data Thumbnail size px credits titles



Input(s) [-] Param [-]

[reset](#)

maximum number of lines (nlines) if 0 (default) then all line will be displayed.
(see description button for more details)

Results [-]

feeds & twitter • sitemap • contact • privacy policy • ISSN: 2105-1232 • DOI: 10.5201/ipol
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5. Conclusion

New ways of publishing

- ▶ An **added value** for a publication
- ▶ Requires **more effort**, but it has also a **larger impact**

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New ways of publishing

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- ▶ Requires **more effort**, but it has also a **larger impact**

Beyond the publication

- ▶ It reveals the **real state of the art**;
- ▶ It shows the **application domains** of a certain method;
- ▶ A new tool for collaborative work and experimentation;
- ▶ The default **way of working** at **Centre Borelli**.

Thanks!

Thank you for your attention

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