Relative Viewport for Graphics Inclusion[*]

Boris Veytsman[†]

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Abstract

The package adds a new keyword `rviewport` to the *graphicx* package specifiying Relative Viewport for graphics inclusion: a window defined by the given fractions of the natural width and height of the image.

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[*] ©Boris Veytsman, 2011. E-mail: `borisv@lk.net`

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1 User Interface

Package *graphicx* provides a useful keyword `viewport` which allows to show just a part of an image. However, one needs to put there the actual coordinates of the viewport window. Sometimes it is useful to have relative coordinates as fractions of natural size. For example, one may want to print a large image on a spread, putting a half on a verso page, and another half on the next recto page. For this one would need a viewport occupying exactly one half of the file's bounding box, whatever the actual width of the image may be.

Here we define the new option `rviewport` for Relative Viewport. It works like this. Suppose the image has the bounding box x_{ll}, y_{ll}, x_{ur}, y_{ur}. We give four numbers ξ_{ll}, η_{ll}, ξ_{ur}, η_{ur}, and the viewport coordinates become

$$\begin{aligned} x'_{ll} &= x_{ll} + \xi_{ll}\Delta_x \\ y'_{ll} &= y_{ll} + \eta_{ll}\Delta_y \\ x'_{ur} &= x_{ll} + \xi_{ur}\Delta_x \\ y'_{ur} &= y_{ll} + \eta_{ur}\Delta_y \end{aligned}$$

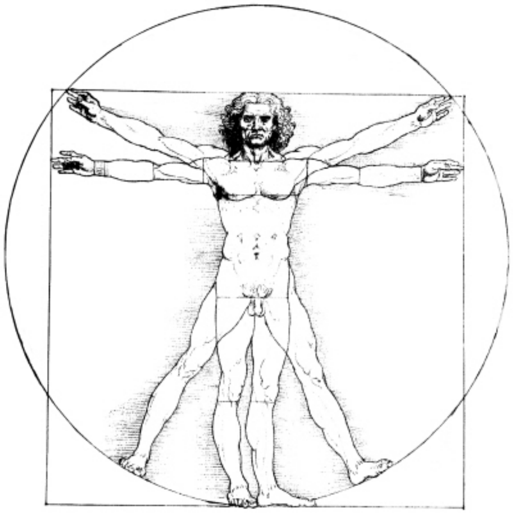
where

$$\begin{aligned} \Delta_x &= x_{ur} - x_{ll} \\ \Delta_y &= y_{ur} - y_{ll} \end{aligned}$$

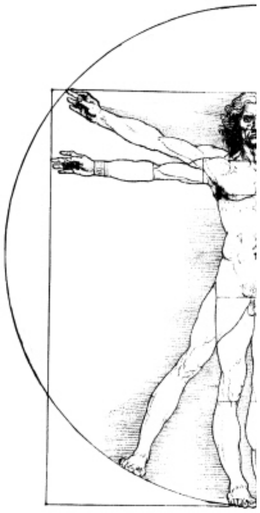
This means that the left half of the image can be defined as `rviewport = 0 0 0.5 1`, and the right half can be defined as `rviewport = 0.5 0 1 1`.

The package may be loaded before or after *graphicx* package.

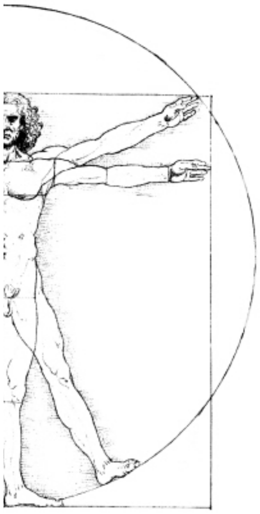
2 Examples



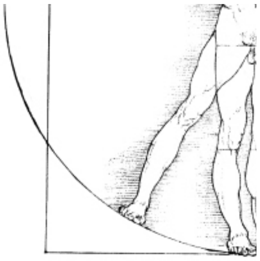
`\includegraphics`[rviewport=0 0 1 1,clip]{`vitruvian`}



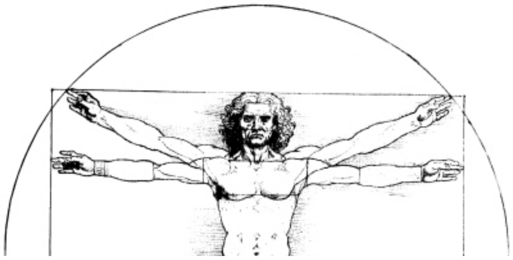
`\includegraphics`[rviewport=0 0 0.5 1,clip]{`vitruvian`}



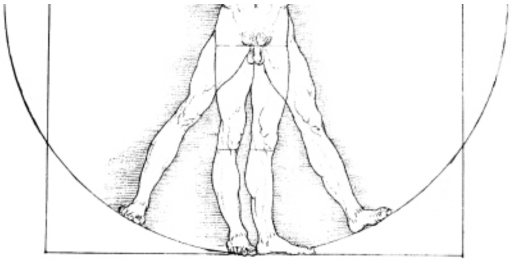
`\includegraphics`[rviewport=0.5 0 1 1,clip]{`vitruvian`}



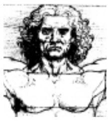
`\includegraphics`[rviewport=0 0 0.5 0.5,clip]{`vitruvian`}



`\includegraphics`[rviewport=0 0.5 1 1,clip]{`vitruvian`}



`\includegraphics`[rviewport=0 0 1 0.5,clip]{`vitruvian`}



`\includegraphics`[rviewport=0.4 0.6 0.6 0.9,clip]{`vitruvian`}

3 Implementation

3.1 Declarations

We start with declaration, who we are:

```
⟨*style⟩
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{rviewport}
[2011/08/27 v1.0 Relative viewport for graphics inclusion]
```

The package *graphicx* loads *keyval*, but in case we are loaded before *graphicx* we require it here:

```
\RequirePackage{keyval}
```

3.2 The New Key

We add a new key for the *graphicx* package:

```
\define@key{Gin}{rviewport}
          {\let\Gin@viewport@code\Gin@rviewport\Gread@parse@rvp#1 \\}
```

`\Gread@parse@rvp` We parse four numbers into the corresponding macros:

```
\def\Gread@parse@rvp#1 #2 #3 #4 #5\\{%
  \def\Gin@vllx{#1}%
  \def\Gin@vlly{#2}%
  \def\Gin@vurx{#3}%
  \def\Gin@vury{#4}}%
```

`\Gin@rviewport` And the viewport code. Note that `pdftex.def` relies on the values of `\Gin@v...` macros, so we redefine them as well.

```
\def\Gin@rviewport{%
  \let\Gin@ollx\Gin@llx
  \let\Gin@olly\Gin@lly
  \let\Gin@ourx\Gin@urx
  \let\Gin@oury\Gin@ury
  \Gin@nat@width\Gin@urx\p@
  \advance\Gin@nat@width-\Gin@llx\p@
  \Gin@nat@height\Gin@ury\p@
  \advance\Gin@nat@height-\Gin@lly\p@
  \dimen@\Gin@vurx\Gin@nat@width
                     \edef\Gin@vurx{\strip@pt\dimen@}%
  \advance\dimen@\Gin@llx\p@
                     \edef\Gin@urx{\strip@pt\dimen@}%
  \dimen@\Gin@vury\Gin@nat@height
                     \edef\Gin@vury{\strip@pt\dimen@}%
  \advance\dimen@\Gin@lly\p@
                     \edef\Gin@ury{\strip@pt\dimen@}%
  \dimen@\Gin@vllx\Gin@nat@width
                     \edef\Gin@vllx{\strip@pt\dimen@}%
  \advance\dimen@\Gin@llx\p@
```

```
                 \edef\Gin@llx{\strip@pt\dimen@}%
\dimen@\Gin@vlly\Gin@nat@height
                   \edef\Gin@vlly{\strip@pt\dimen@}%
\advance\dimen@\Gin@lly\p@
                  \edef\Gin@lly{\strip@pt\dimen@}}
```

3.3 The Last Words

⟨/style⟩

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