Working with figure environments in texor

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Abstract This is a small sample article to demonstrate usage of texor to convert figure environments.

1 Introduction

Images are an essential component in any article, However due to the differences in the support for various graphic formats between LaTeX and markdown/HTML we need to fallback on raster graphics. It is well summarized in the Table 1.

Graphics Format	LaTeX	Markdown	Rmarkdown	HTML
PNG	Yes	Yes	Yes	Yes
JPG	Yes	Yes	Yes	Yes
PDF	Yes	No	No	No
SVG	No	Yes	Yes	Yes
Tikz	Yes	No	Yes	No
Algorithm	Yes	No	No	No

Table 1: Image Format support in various Markup/Typesetting Languages

2 Image with width parameters

This section may contain a figure such as Figure 1. This is the most basic example of figure.

```
\begin{figure}[htbp]
  \centering
  \includegraphics[width=0.35\textwidth]{Rlogo-5.png}
  \caption{The logo of R.}
  \label{figure:rlogo}
\end{figure}
```

Figure 1: The logo of R.

3 Images in PDF format

Image 2 is a graphical representation of normal distribution.

```
\begin{figure}[htbp]
  \centering
  \includegraphics[width=0.5\textwidth]{normal}
  \caption{PDF of a normal distribution}
  \label{fig:normal}
\end{figure}
```

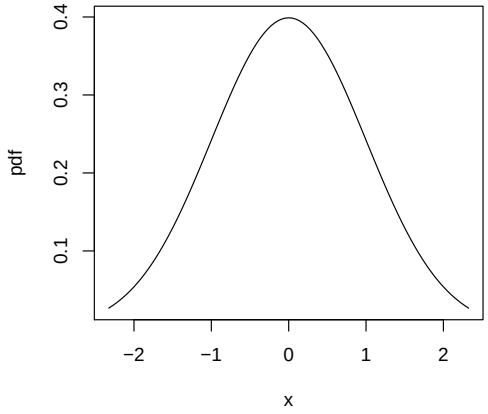

Figure 2: PDF of a normal distribution

4 Multiple images

Pandoc v3 and above now supports a new Figure object (Krewinkel, Lucero , 2023) which supports multiple images side by side or in a grid format.

Two or more Images side by side

```
\begin{figure}[htbp]
  \centering
 \includegraphics[width=0.45\textwidth]{Rlogo-5.png}\includegraphics[width=0.45\textwidth]{normal}
  \caption{Images side by side}
  \label{fig:twoimages}
\end{figure}
```

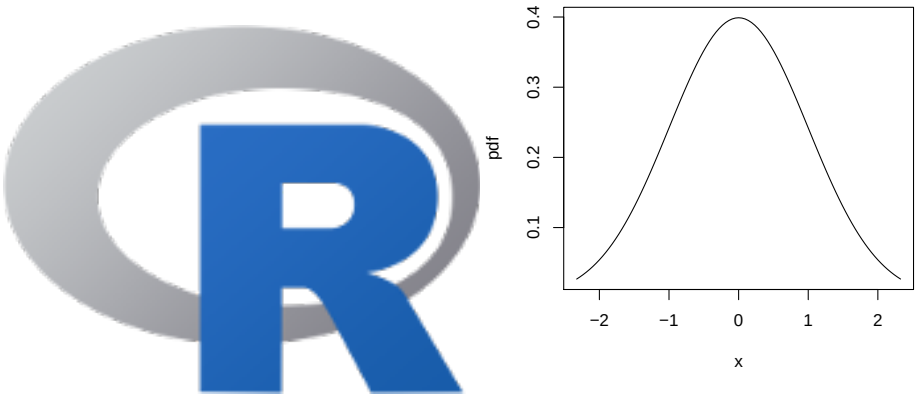

Figure 3: Images side by side

Four Images in a grid

```
\begin{figure}[htbp]
  \centering
 \includegraphics[width=0.45\textwidth]{Rlogo-5.png}\includegraphics[width=0.45\textwidth]{normal}
 \includegraphics[width=0.45\textwidth]{normal}\includegraphics[width=0.45\textwidth]{Rlogo-5.png}
```

```
  \caption{Multiple images in a grid}
  \label{fig:fourimages}
\end{figure}
```

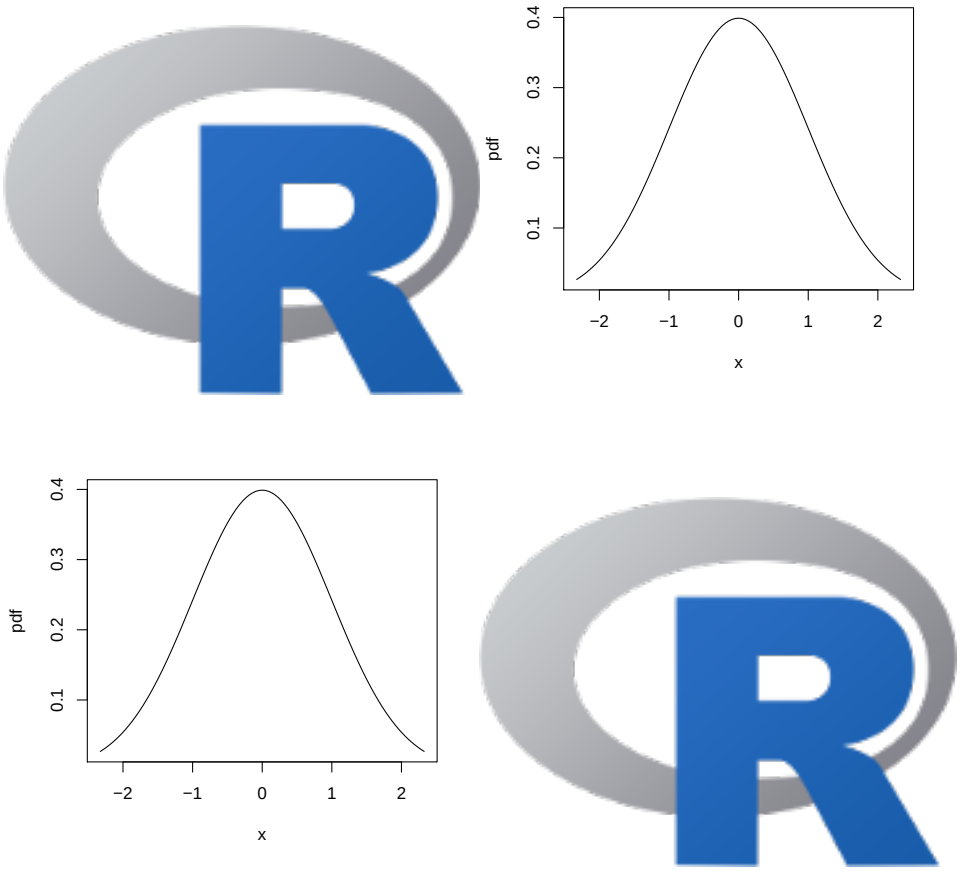

Figure 4: Multiple images in a grid

5 Tikz images

Here is a tikz image example in fig 5 adapted from (Cassidy, 2013).

Another interesting aspect of including tikz image here is that you can modify the source and re-convert without making any other changes. Figure will get updated in the generated html article.

Tikz Code:

```
\begin{figure}

%% Generated Image will included as a PNG above automatically
  \centering
\tikzstyle{process} = [rectangle, rounded corners,
minimum width=3cm,
minimum height=1cm,
text centered,
draw=black]
\tikzstyle{arrow} = [thick,->,>=stealth]
\begin{tikzpicture}[node distance=4cm]
%Nodes
```

```
\node (start) [process] {LaTeX Source with Tikz Image};
\node (isolate) [process, below right of=start] {Isolated tikz env};
\node (pro1) [process, below left of=isolate] {Standalone PDF file};
\node (pro2) [process, below right of=pro1, yshift=-0.5cm] {PNG file};
\node (link) [process, below left of=pro2] {Include PNG in article};
\node (stop) [process, below right of=link] {Convert To RJ-web-article};
% arrows
\draw [arrow] (start) -- node[anchor=east] {Extract Figure Block} (isolate);
\draw [arrow] (isolate) -- node[anchor=east] {Compile} (pro1);
\draw [arrow] (pro1) -- node[anchor=east] {Convert to raster} (pro2);
\draw [arrow] (pro2) -- node[anchor=east] {Include back to source as image} (link);
\draw [arrow] (link) -- node[anchor=east] {Using Pandoc} (stop);
\end{tikzpicture}
\caption{Tikz Image example}
  \label{fig:tikz}
\end{figure}
```

Resultant Figure :

6 Algorithm2e diagrams

we do support algorithm2e diagrams and images, these will be numbered differently and we strongly suggest to use "alg:" in labels for best results. Here is an example of algorithm 1, referenced from Fiorio (2017)

```
\begin{algorithm}[htbp]
\SetAlgoLined
\KwData{this text}
\KwResult{how to write algorithm with \LaTeX2e }
initialization\;
\While{not at end of this document}{
read current\;
\eIf{understand}{
go to next section\;
current section becomes this one\;
}{
go back to the beginning of current section\;
}
}
\caption{How to write algorithms}
  \label{alg:how}
\end{algorithm}
```

Data: this text
Result: how to write algorithm with LaTeX2e
initialization;
while *not at end of this document* **do**
  read current;
  if *understand* **then**
    go to next section;
    current section becomes this one;
  else
    go back to the beginning of current section;
  end
end

Algorithm 1: How to write algorithms

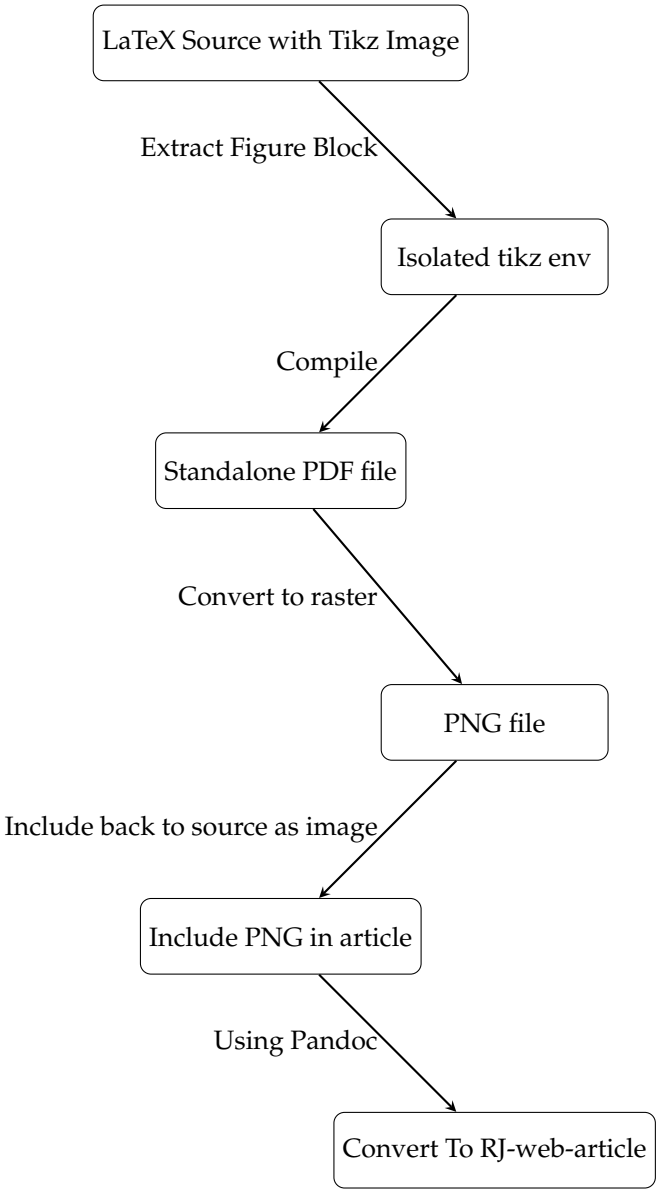

Figure 5: Tikz Image example

7 Other elements in figure objects

Figures can also house non-image environments like CodeBlocks and Para. This also creates an opportunity to add support for CodeBlock numbering with some lua filter trickery.

```
code_in_figure <- function() {
  if (pandoc_version >= 3) {
    print("Code in Figure Supported")
  }
  else {
    print("code in Figure not supported")
  }
}
```

Figure 6: Example Code inside Figure environment

8 Summary

In summary the **texor** package supports:

- Almost all image formats in LaTeX.
- Algorithm and tikz as well in some capacity.
- Multiple images in grid,side-by-side configuration.
- Image Captions with Numbering and Labelling.

Bibliography

Josh Cassidy LaTeX Graphics using TikZ: A Tutorial for Beginners (Part 3)—Creating Flowcharts *Overleaf tutorials* 2013 URL https://www.overleaf.com/learn/latex/ [p3]

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