

## The tikzducks Package

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### Abstract

TikZducks is a funny little package to draw rubber ducks in TikZ. The following article will give a short overview of the package and show some examples of how the TikZducks package can be used.

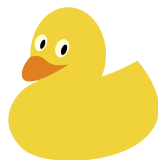
### 1 Introduc(k)tion

The host country of TUG'18, Brazil, is also the home country of *Hevea brasiliensis*, commonly known as rubber tree. This tree is the source of natural latex, which (or some of its synthetic replacements) can be used to produce rubber ducks.

This raises the question if rubber ducks can also be made of L<sup>A</sup>T<sub>E</sub>X? Yes, they can — using the TikZducks package! This package originates from a post on T<sub>E</sub>X.StackExchange [2] which showed that the T<sub>E</sub>X community a) has a great sense of humour and b) seemed to be in desperate need of a package to easily add ducks to their documents. The package is now available on CTAN ([ctan.org/pkg/tikzducks](http://ctan.org/pkg/tikzducks)) and included in both T<sub>E</sub>X Live and MiK<sub>T</sub>E<sub>X</sub>.

The basic usage is fairly simple:

```
\documentclass{standalone}
\usepackage{tikzducks}
\begin{document}
\begin{tikzpicture}
\duck
\end{tikzpicture}
\end{document}
```



Instead of loading it as a package, there is also a TikZ library with the same functionality:

```
\documentclass[tikz]{standalone}
\usetikzlibrary{ducks}
\begin{document}
\begin{tikzpicture}
\draw (0,0) pic {duck};
\end{tikzpicture}
\end{document}
```



### 2 Modularity

Drawing a simple yellow duck is by far not the only thing which this package is capable of. It comes with many accessories and the ability to adjust colours to customise the ducks. Both can be controlled with an intuitive key-value interface. For example, the colour of the various body parts can be changed:

```
\duck[body=blue,head=yellow,
bill=red,eye=green]
```



Or accessories can be added:

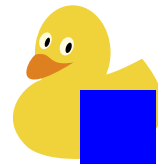
```
\duck[cap=blue,cricket]
```



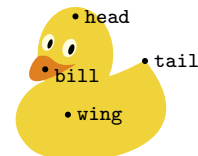
As can be seen in the above example, the colour of additional components can usually be changed in the same way as for the body parts. A complete list of all the available options would exceed the scope of this *TUGboat* article; please see the package documentation [3, Section 2].

The customisation of the TikZducks is not limited to the predefined accessories included in the package. In the end, the ducks are just shapes in a `tikzpicture`. This means that the essentially infinite amount of possibilities of TikZ are available for further customisation. A trivial example:

```
\duck
\fill (2,0) rectangle (1,1);
```



To ease customisation, the TikZducks package predefines some coordinates at prominent positions:



### 3 Football ducks

TUG'18 is taking place in the football nation Brazil, so it is only appropriate that the TikZducks can not just play football (`\duck[football]`), but also have customisable jerseys. The special macro `\stripes` adds a highly adjustable stripe pattern which allows emulating jerseys from nearly every team. The following example shows how to reproduce the jerseys of the Brazil national team:

```
\duck[tshirt=Green,jacket=Gold,
football,stripes={
\stripes[color=Blue,
rotate=-75,width=0.5,
distance=1.5]}}
```



### 4 Duckify a person

A nice application of the TikZducks is to “duckify” persons. In the following a short tutorial will give an idea how this can be done based on a photograph.

As an example, let's use this photo of Don Knuth (image by J. Appelbaum [1]):



As a first step, suitable colours have to be determined. For all non-artists, this process can be simplified with a colour picker tool, which is included in many image manipulation programs (e.g., `gimp`) or as standalone applications. The following colours are extracted from the example image:

**sweater:** RGB = (95, 42, 50)

**shirt:** RGB = (241, 238, 254)

**skin:** RGB = (229, 175, 166)

If colours derived from a photo are used to fill large shapes of solid colour, they are sometimes perceived as too dark. This problem can be solved by mixing them with white to make them a bit lighter. With slightly lightened colours and some suitable accessories the following “duckified” version of Don Knuth can be drawn:

```
\definecolor{jacket}{RGB}{95,42,50}
\definecolor{skin}{RGB}{229,175,166}
\definecolor{shirt}{RGB}{241,238,254}
\duck[%
  body=skin!50!white,
  bill=skin!80!gray,
  tshirt=shirt, jacket=jacket,
  recedinghair=lightgray!80!brown,
  squareglasses=brown!30!lightgray,
  eyebrow, book=\TeX,
  bookcolour=black!40!brown
]
```



## 5 Examples

As mentioned above, see the package documentation for all of `TikZducks`'s myriad possibilities, but as a teaser, here are a few examples:



From top left to bottom right: Frenchman duck, crowned duck, duck scout, bee duck, Royal Swan Upper, Albert Einstein, witch duck and David Hilbert.

To see more examples, there are some collections available online

- [github.com/samcarter8/tikzducks/tree/master/duckpond](https://github.com/samcarter8/tikzducks/tree/master/duckpond)
- [tex.stackexchange.com/questions/387047](https://tex.stackexchange.com/questions/387047)

to which users can also contribute their creations. There are even several videos produced by Ulrike and Gert Fischer, Carla Maggi and Paulo Cereda, featuring the `TikZducks`:

- The great `TikZducks` Christmas Extravaganza, [vimeo.com/246256860](https://vimeo.com/246256860)
- International Pizza Day, [vimeo.com/254643482](https://vimeo.com/254643482)
- Happy Groundhog Day, [vimeo.com/252719006](https://vimeo.com/252719006)
- Aquarela with `TikZducks`, [vimeo.com/270727100](https://vimeo.com/270727100)

## 6 Suggestions or problems

The package source is hosted at <https://github.com/samcarter8/tikzducks>, along with a tracker for bug reports, feature requests or contributions. For questions related to the package there is a special `{tikzducks}` tag available at `TeX.StackExchange`.

## 7 Acknowledgments

I would like to thank the `TeX` Users Group for the possibility to present the `TikZducks` package at their annual meeting and especially Paulo Cereda for the vivid presentation he gave in Rio de Janeiro!

The author of the `TikZducks` package is grateful for the valuable contributions and suggestions received from Ulrike Fischer, Carla Maggi, Enrico Gregorio, Andrew Stacey and many others.

## References

- [1] J. Appelbaum. Licensed under CC BY-SA. <https://en.wikipedia.org/wiki/File:KnuthAtOpenContentAlliance.jpg>
- [2] How can we draw a duck?, 2017. [tex.stackexchange.com/q/346695](https://tex.stackexchange.com/q/346695)
- [3] samcarter. *The TikZducks package, Version 0.7*, 2018. [ctan.org/pkg/tikzducks](https://ctan.org/pkg/tikzducks)

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