Fish recognition using deep convolutional neural network and data augmentation

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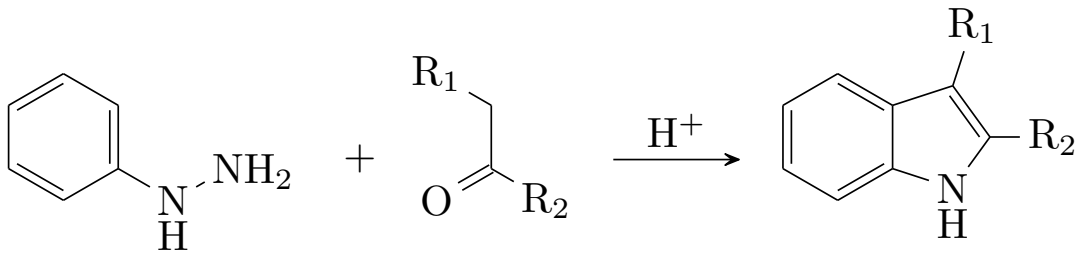
Outline

Introduction

A sub topic of computer vision and fishery industry

Main difficulties

You can also find more quick tips and tricks on the help pages at `www.overleaf.com/help`



The Main difficulties

We focus on two LaTeX chemistry packages:

The `chemfig` package

This package provides the command which draws molecules. Created by Christian Tellechea, a detailed user guide can be found here:

`www.tex.ac.uk/ctan/macros/generic/chemfig/chemfig_doc_en.pdf`

The `mhchem` package

The `mhchem` package provides simple commands for typesetting chemical molecular formulae and equations. Created by Martin Hensel, a detailed user guide can be found here:

`http://mirror.ox.ac.uk/sites/ctan.org/macros/latex/contrib/mhchem/mhchem.pdf`

Chemical equations with `mhchem`

The `mhchem` package lets you write chemical equations in LaTeX with the minimum of effort.

The example below shows how the standard representation of a reaction (on the left) is created from the simple code on the right:

$\mathrm{CO_2 + C \longrightarrow 2\,CO}$ is created with `\ce{CO2 + C -> 2CO}`

More complicated reactions are still easy to write:

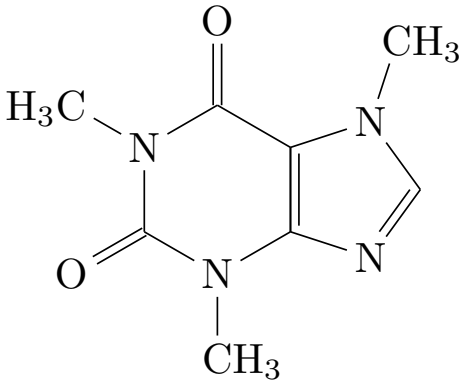
$\mathrm{SO_4^{2-} + Ba^{2+} \longrightarrow BaSO_4\downarrow}$

is created with

`\ce{SO4^2- + Ba^2+ -> BaSO4 v}`

Getting started with some `chemfig` coffee

It's easy to use the `chemfig` package for drawing complex molecules:



This is the caffeine molecule, represented clearly and neatly, and built from a single line of text:

```
\chemfig{*6((=O)-N(-CH_3)-*5(-N=-N(-CH_3)-=)--(=O)-N(-H_3C)-)}
```

If that looks quite daunting, we can learn from simpler molecules... how about a single water molecule?

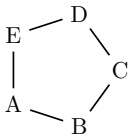
Experiments with water and rings

To see how the `chemfig` package creates the drawings from your code, let us look at the simple water molecule:

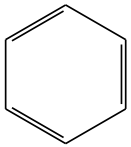
H_2O is created with `\chemfig{H_2O}`

The simple LaTeX code on the right is automatically converted into the molecular formula for water on the left.

Rings are similarly easy to code - consider the examples below:



= `\chemfig{A*5(-B-C-D-E-)}`



= `\chemfig{*6(=-=-=-)}`

Where to go next...

This short example was designed to introduce you to using Overleaf for scientific presentations.

This is made possible by the many great packages that have been developed for LaTeX, including the two we focused on here (plus the `Beamer` package used for the overall presentation style).

For more help on using LaTeX, see the links on the Overleaf help page: `www.overleaf.com/help` or check out our free introductory course: `www.overleaf.com/blog/7`.

Follow @overleaf on Twitter for all the latest news and updates.

Happy LaTeXing!