Fish recognition using deep convolutional neural network and data augmentation

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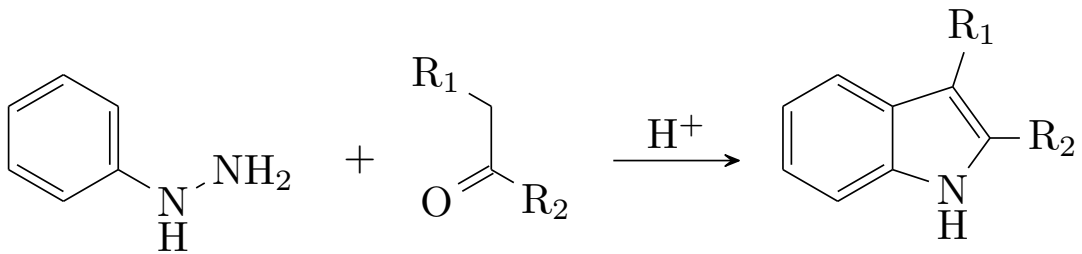
Outline

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 importance of fish recognition

significant application of computer vision in fish survey

Benefit the develop of the marine resources

The needs of aquaculture and fishery

The main difficulties

Various kinds of fish

Complex background of images

Small fish region

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:

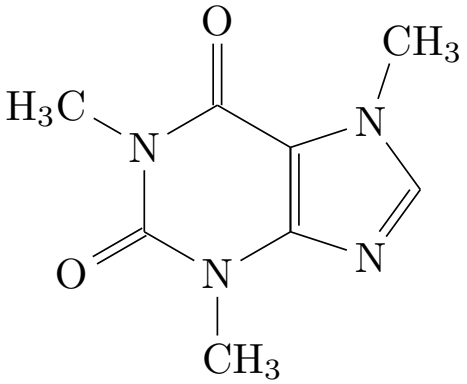
$\mathrm{SO_4^{2-} + Ba^{2+} \longrightarrow BaSO_4 \downarrow}$

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?

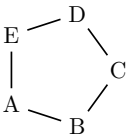
Experiments with water and rings

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

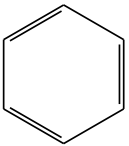
H_2O is created with `\chemfig{H_2O}`

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`.

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Happy LaTeXing!