结合texlive生成专业文稿

minoptlab 不仅可以结合markdown生成pdf格式的学术报告，而且可以结合texlive生成PDF格式的专业文稿。

先创建latex模板文件如下：

```
\documentclass[a4paper,10pt]{article}
\usepackage{ctex}
\usepackage{amsmath}
\usepackage{nicematrix}
\usepackage{graphicx}



\begin{document}
\title {minoptlab与科学计算}
\author{minoptlab.com}
\date{{< today >}}
\maketitle

\pagenumbering{roman}
\tableofcontents

\newpage
\pagenumbering{arabic}

\begin{abstract}
人生是一个漫长的学习过程。所谓“上学”，应该是提升自己的学习能力，而不是背诵很多标准答案。好学生即使做坏事也会出类拔萃！
\end{abstract}

\section{英文}
Women around the world face pressure to get married,
The EPR paradox~\cite{einstein1935can} questioned whether
```

```
quantum mechanics is complete.


\section{计算与绘图}

$$\int_{0}^{\pi}\sin(x) \mathrm{d}x = {< value >}$$

\begin{figure}[htbp]
\centering
\includegraphics[width=0.90\textwidth]{{< imurl >}}
\caption{$\int_{0}^{\pi}\sin(x) \mathrm{d}x$}
\end{figure}

{\small
$$
A =
\begin{pNiceMatrix}[r]
{% for item in A %}
{% for jtem in item %} {% if loop.is_last %} {< jtem >} {%
else %} {< jtem >} & {% endif %} {% endfor %}\\
{% endfor %}
\end{pNiceMatrix}
$$
}

{\small
$$
b =
\begin{pNiceMatrix}[r]
{% for item in b %}
{% for jtem in item %} {% if loop.is_last %} {< jtem >} {%
else %} {< jtem >} & {% endif %} {% endfor %}\\
{% endfor %}
\end{pNiceMatrix}
$$
}

{\small
$$
x = A\mathbf{:solve}(b) =
```

```
\begin{pNiceMatrix}[r]
{% for item in x %}
{% for jtem in item %} {% if loop.is_last %} {< jtem >} {%
else %} {< jtem >} & {% endif %} {% endfor %}\\
{% endfor %}
\end{pNiceMatrix}
$$
}


{\small
$$
A^{-1} =
\begin{pNiceMatrix}[r]
{% for item in B %}
{% for jtem in item %} {% if loop.is_last %} {< jtem >} {%
else %} {< jtem >} & {% endif %} {% endfor %}\\
{% endfor %}
\end{pNiceMatrix}
$$
}


{\small
$$
A \times A^{-1} =
\begin{pNiceMatrix}[r]
{% for item in C %}
{% for jtem in item %} {% if loop.is_last %} {< jtem >} {%
else %} {< jtem >} & {% endif %} {% endfor %}\\
{% endfor %}
\end{pNiceMatrix}
$$
}

{\small
$$
x = A^{-1} \times b =
\begin{pNiceMatrix}[r]
{% for item in y %}
```

```
{% for jtem in item %} {% if loop.is_last %} {< jtem >} {%
else %} {< jtem >} & {% endif %} {% endfor %}\\
{% endfor %}
\end{pNiceMatrix}
$$
}


\bibliographystyle{plain}
\bibliography{refs}
\end{document}
```

相关refs.bib文献为:

```
@article{einstein1935can,
  author  = {Einstein, A. and Podolsky, B. and Rosen, N.},
  title   = {Can Quantum-Mechanical Description of Physical
Reality Be Considered Complete?},
  journal = {Physical Review},
  year    = {1935},
  volume  = {47},
  number  = {10},
  pages   = {777--780},
  doi     = {10.1103/PhysRev.47.777}
}
```

再创建一个计算脚本，运行它将把计算结果导入上述模板，进而生成可编译的tex文件，最后用texlive编译即可。

```
local print = require('package.print').print
local inja = require('package.inja')
local plt = require('package.plot')
local mol = libminoptlab


local A = mol.matrix.random(3,3,0,1)
local b = mol.matrix.random(3,1,0,1)
local x = A:solve(b)
--print(A:mul(x)-b)
local B = A:inv()
local y = B:mul(b)
local C = A:mul(B)

local xdat = mol.linspace(0, math.pi, 50)
local ydat = mol.apply(xdat, math.sin)
local line = plt.line({{xdat, ydat}},{'$\\sin(x)$'},{nil},
{{grid={true},fill_between={xdat,ydat,{alpha=0.2}}}})
local fw = plt.framework(111, nil, {'x', 'y'})
local fig_path = 'sin.png'
plt.show({{fw,{line}}},fig_path,false)


inja.render_to('latex.tmpl',{
        A = A:view(),b = b:view(),x = x:view(),
        B = B:view(),y = y:view(),
        C = C:view(),
        today = os.date("%Y-%m-%d %H:%M:%S"),
        value = mol.integrate(math.sin,0,math.pi),
        imurl = fig_path
},'latex.tex')
```

最终文稿参见以下链接： latex.pdf

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