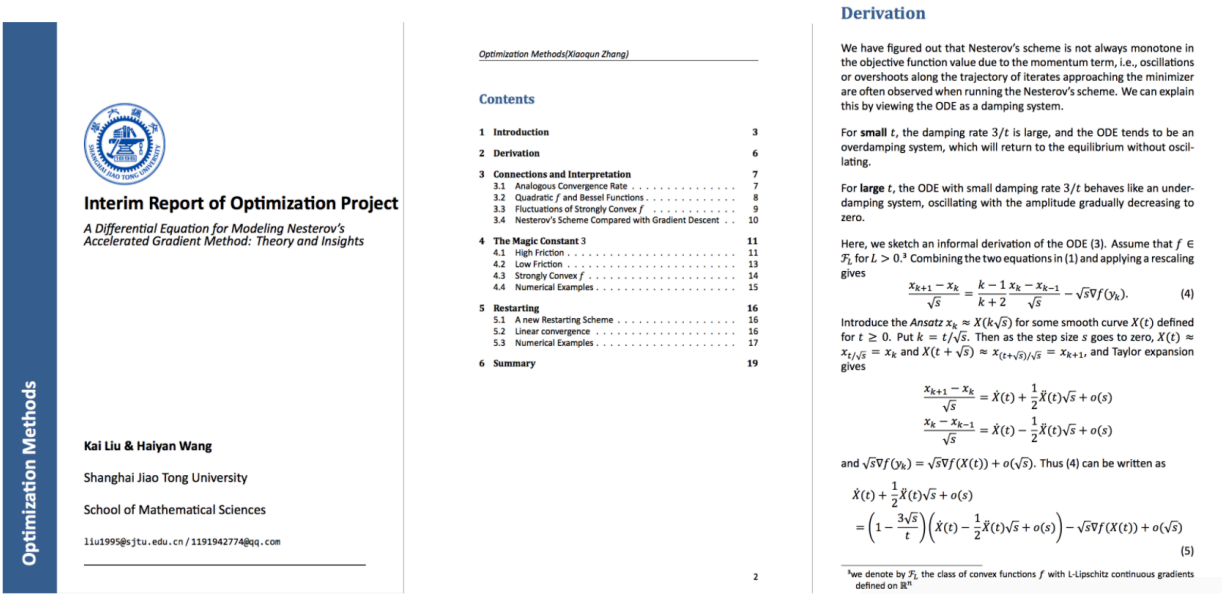
LaTeX 优雅美观的文档编写

生活中总会有各种各样**文字处理**的需求，尤其在大学校园，很多时候需要提交纸质版电子文档，制作简洁的PPT等。

- 是否羡慕身边那些熟练掌握文字处理技巧和排版技能的同学呢！
- 是否被打印店Office版本不兼容导致内容排布错乱弄得直呼心累！！
- 是否被课程大作业、毕业论文中Word分节、各种格式难调搞得焦头烂额！！！

不用羡慕，不必烦躁，因为我们有更加优雅高效的解决方案！—— LaTeX

实际上，LaTeX 离我们并不遥远。大学课本上长串的数学公式、化学方程式、电路控制图，Springer 等各大出版社的论文等等，都离不开 LaTeX 的排版支持。利用 LaTeX，想写出精致的文稿其实很简单！



Optimization Methods

Interim Report of Optimization Project

A Differential Equation for Modeling Nesterov's Accelerated Gradient Method: Theory and Insights

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Optimization Methods(Xiaoqun Zhang)

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Derivation

We have figured out that Nesterov's scheme is not always monotone in the objective function value due to the momentum term, i.e., oscillations or overshoots along the trajectory of iterates approaching the minimizer are often observed when running the Nesterov's scheme. We can explain this by viewing the ODE as a damping system.

For **small** t, the damping rate $3/t$ is large, and the ODE tends to be an overdamping system, which will return to the equilibrium without oscillating.

For **large** t, the ODE with small damping rate $3/t$ behaves like an underdamping system, oscillating with the amplitude gradually decreasing to zero.

Here, we sketch an informal derivation of the ODE (3). Assume that $f \in \mathcal{F}_L$ for $L > 0$.[3] Combining the two equations in (1) and applying a rescaling gives

$$\frac{x_{k+1}-x_k}{\sqrt{s}} = \frac{k-1}{k+2}\frac{x_k-x_{k-1}}{\sqrt{s}} - \sqrt{s}\nabla f(y_k). \tag{4}$$

Introduce the *Ansatz* $x_k \approx X(k\sqrt{s})$ for some smooth curve $X(t)$ defined for $t \geq 0$. Put $k = t/\sqrt{s}$. Then as the step size s goes to zero, $X(t) \approx x_{t/\sqrt{s}} = x_k$ and $X(t+\sqrt{s}) \approx x_{(t+\sqrt{s})/\sqrt{s}} = x_{k+1}$, and Taylor expansion gives

$$\frac{x_{k+1}-x_k}{\sqrt{s}} = \dot{X}(t) + \frac{1}{2}\ddot{X}(t)\sqrt{s} + o(s)$$
$$\frac{x_k-x_{k-1}}{\sqrt{s}} = \dot{X}(t) - \frac{1}{2}\ddot{X}(t)\sqrt{s} + o(s)$$

and $\sqrt{s}\nabla f(y_k) = \sqrt{s}\nabla f(X(t)) + o(\sqrt{s})$. Thus (4) can be written as

$$\dot{X}(t) + \frac{1}{2}\ddot{X}(t)\sqrt{s} + o(s)$$
$$= \left(1 - \frac{3\sqrt{s}}{t}\right)\left(\dot{X}(t) - \frac{1}{2}\ddot{X}(t)\sqrt{s} + o(s)\right) - \sqrt{s}\nabla f(X(t)) + o(\sqrt{s}) \tag{5}$$

[3] we denote by $\mathcal{F}_L$ the class of convex functions f with L-Lipschitz continuous gradients defined on $\mathbb{R}^n$.

我是谁

一个Office菜鸟，自称二流Excel水平，三流Word水平，却又不愿向巨硬低头的研究生。利用 LaTeX 编写各类文档已有一年经验，包括但不限于：课程笔记/作业、个人简历、LaTeX幻灯片、LaTeX策划书、LaTeX海报、LaTeX申请信等。

Kai Liu

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Currently 1st year student in School of Mathematical Science leading to a master of science degree. I'm looking for a internship as assistant data analyst, for autumn 2017

Education and qualifications

Shanghai Jiao Tong University — Shanghai, China
School of Mathematical Science, 2.5 years (eq. Master degree)
Currently in 1st year, major in optimization and arithmetic

Shanghai Jiao Tong University — Shanghai, China
Department of Mathematical Science, 4 years (eq. Bachelor degree)
major in applied mathematics, with honours

Other qualifications

Certified Public Accountant
Teacher Certification

Computer skills

Programming langages
frequent use: Python, R, C, Java, JavaScript, HTML.
known: C++, SQL, Maple, Mathematica, Matlab.

Others
operating system: Microsoft Windows, Linux, OS X
software suites: Vim, Pycharm, Jupyter notebook, Tableau, SPSS, awk, LaTeX,Microsoft Office, Adobe CC, Prezi, Maxima...

Projects

Modified Levenberg-Marquardt method: We propose a modified Levenberg-Marquardt method for nonlinear equations, in which not only a LM step but also an approximate LM step are computed at every iteration.
Data mining and visualization: In spare time, I have made a lot of work in data mining and visualization.

Languages

English: CET6 passed — Korean: A3, Basic level

Work experience

School of MS, SJTU — Shanghai, China
Chairman of Graduate Student Union, Union of nearly 200 graduate students
team of 15 students

ACEM, SJTU — Shanghai, China
Academic tutor, Camp of 300 undergraduates
team of two tutors

Matrix Theory, SJTU — Shanghai, China
Teaching Assistant, Course of 160 graduate students
with my tutor, Jinyan Fan

Interests

Computer science: Nonlinear programming, quantitative investing, machine learning, artificial intelligence..., their implementation, and numerical computation.
Science: Mathematic, machine learning, statistics...

SHANGHAI JIAO TONG UNIVERSITY

Kai Liu, Master candidate

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May 23, 2017

Prof. Manuel
College of Michigan
Shanghai Jiao Tong University
Min Hang District, Shanghai, 200240

Dear Sir,

I heard with great interest the job posting for assistant teacher at College of Michigan.

It is the first year of my graduate study, also, the 5th year of my SJTU life. Majoring in computational mathematics, I have studied numerical methods during the undergraduate, and gained a comprehensive understanding of scientific computing while doing my research.

I have been working as academic tutor for one year, and I'm able to meet various needs of undergraduates. Also, in the previous semester, I worked with Professor Jinyan Fan as a teaching assistant of graduate course, Matrix Theory. In addition, I have learned many computer skills, such as Matlab, Mathematica and Python. If necessary, I am willing to offer the solution manual by LaTeX or Markdown.

I think I am well qualified and passionate enough to work as a T.A. of the numerical method course. I would appreciate it if you could offer me the opportunity.

Looking forward to your reply.

Sincerely,

Kai Liu, Master candidate

Harsh Gadgil
Data Scientist,
Full Stack Developer

LinkedIn /in/hsgadgil
+1 205 282 9201
http://www.hgadgil.com/
harsh.gadgil@gmail.com

Skills

Interests
Software Engineering
Data Science
Test Automation
Dev Ops

Languages

Education

Expected Dec 2016 — MSc., Computer Science — University of Guelph
Guelph, Ontario, Canada
Current GPA: 3.7/4, 83%

2009 - 2013 — BEng., Computer Engineering — University of Pune
Pune, Maharashtra, India
GPA: 4.0, First Class with Distinction

Research

2015 - 2016 — Graduate Research Assistant — University of Guelph

- Performed classification using Support Vector Machine and multivariate regression analyses using Logistic Regression
- Proposed a novel method to reliably integrate large, noisy datasets. Evaluated the method on datasets containing six million records
- A paper describing the method and preliminary results is accepted for publication in the proceedings of the IEEE International Conference of Data Mining 2016

Experience

Sep 2015 - May 2016 — Co-Founder & Full Stack Developer — LocalXChange Inc.

- In a team of two, won $8,000 in funding from The Hub incubator (CBaSE, University of Guelph) to kick start a startup venture
- In a team of three, built a prototype hyperlocal content platform. The goal was to deliver hyperlocal news, events and other content from community organizations to local users
- Built hybrid mobile and web apps using Node.js, Ionic, AngularJS and MongoDB. Performed automated testing using Selenium.
- Met with city officials, including the Mayor, and university executives to marketing & business strategies for the platform

Sept 2015 - Present — Graduate Teaching Assistant — University of Guelph

- TA for CIS*2430 (OOP), CIS*4150 (Software Reliability & Testing) and CIS*3530 (Database Systems & Concepts) courses

Dec 2013 - Apr 2015 — Test Automation Engineer — Synechron

- Developed a *Keyword Driven* and *Behavior Driven* test automation framework for Microsoft Dynamics CRM. Wrote an efficient recursive function to search within multi-level nested frames, reducing development time by several weeks. Won SPOT award
My work opened up a new position in the organization, enabling it to earn additional revenue
- Involved in development of a Coded UI test automation framework for Microsoft Dynamics AX in C#
- Involved in manual testing for F3CO Blaze Advisor. Participated in standup meetings and Three Amigos sessions with on-shore/offshore developers and BAs. Responsible for sending daily status reports and testing user stories. Used JIRA and Quality Center for defect reporting, and Quick Test Professional for executing automated test cases

写在前面的话

LaTeX 是Linux时代的产物，相比Word*所见即所得*的易用特点，LaTeX是一个严格意义上的文字排版语言。它严谨而优美，适用于**多平台**的写作。用户可以在没有任何排版和程序设计基础的情况下，充分发挥 TeX 的强大功能，通过简单的学习就能在几天，甚至几小时内生成具有**出版社水平**的印刷品。更加重要的一点是，在文档复杂程度和规模体量变大时，LaTeX 依旧可以保证高效率的文稿产出！这不禁让我感叹，既生 LaTeX 何需 Word?

安装 LaTeX

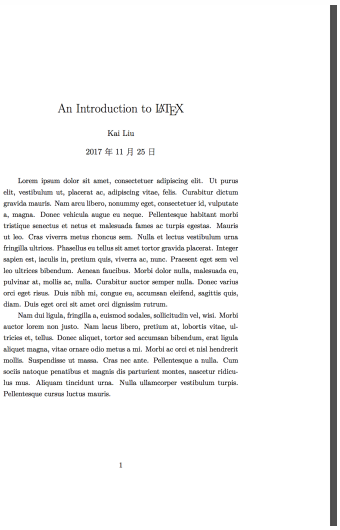
说了这么多，到底怎么安装 LaTeX 呢?

- Windows 和 Linux 用户可在交大葡萄站点搜索TeXLive，下载2017发行版
- Mac 用户请选择 MacTeX，同样可在交大葡萄找到。

由于安装包较大，网速受限的同学可以点击关注**交大数院研究生会**, 后台回复 LaTeX，即可获得转存网盘链接。

你将从这里看到

0. LaTeX 的多种用途：写文章、做简历、幻灯片等等。
1. 一个 LaTeX 文档从编辑到发布的全过程
2. 以 LaTeX 的思维组织你的文章结构
3. 利用 LaTeX 进行强有力的数学公式排版
4. 在 LaTeX 文档中插入精美的图片/表格
5. 如何自动化设置页眉页脚等版式
6. LaTeX 语法特点和问题处理



活动安排

此次活动主要介绍 LaTeX 从0到1的应用。时间定于本周三 **11月29日晚 7：30-9：00**，地点在**数学系大会议室**。

现场为各位同学准备了茶点零食，**前三十位**到场的同学还将获得由 LaTeX 制作的精美入门教程。

后续活动消息敬请关注[交大数学研究生会]