学术论文写作

需求分析-审稿

How to review VIS papers，Zhicheng Liu

https://www.bilibili.com/video/BV1zh411m73A?share_source=copy_web

Acknowledgment

IEEE VIS Reviewing Guidance, 2021

"How to Review HCI/Visualization Papers" by Niklas Elmqvist

"Process and Pitfalls in Writing Information Visualization Research Papers"
by Tamara Munzner

"Tips for being a Good Visualization Paper Reviewer" by John Stasko

Evaluating the paper

- Types of contributions

- What make a good VIS paper

- What make a weak paper(reasons for rejections)

Evaluating the paper

- Types of contributions
  - Data Structure
  - algorithm
  - Design
  - System
  - Evaluation/Empirical
  - Model/Theory

理论（框架、体系）、算法、数据、工具平台、应用、综述、评价、案例、用户分析等

Data Structure & Algorithm
data processing, visual mapping and layout, scalable interaction, ...

Design
choices of data transformation, visual representation, interaction, workflows based on domain, user, data and task

Empirical
perceptual & cognitive experiments, dataset curation and analysis, ...

System
toolkits, grammar, authoring tools, hardware and software platforms

Theory
concepts, taxonomies, models about visual representation, interaction, users, and tasks

What make s a good paper

- Strong motivation problem
- Novel ideas
  - Demonstrating knowledge of state of the art and related literature
- Clear writing and presentation
- Validated results

What makes a good paper

Strong motivating problem

Data Structure & Algorithm
performance, readability

Design
potential impact, generalizability

Empirical
inform practice, build theory

System
expressivity, extensibility

Theory
descriptive power, predictive power

What make s a good paper

- Strong motivation problem
- Novel ideas
- Clear writing and presentation
- Validated results
  - Benchmarking
  - Lab study with metrics
  - Experiments design & analysis method justification
  - Example gallery
  - Open source & deployment

What makes a weak paper

- Poorly motivated, insignificant problem

- Idea not novel

- Too much within one paper

- Bad writing(indication of confused thinking)

- Not showing knowledge of important related work

- Wrong claim of contribution (coding != contribution)

- No validation of results

学术论文

- 论文只是一个载体，是科学领域交流的工具。用最简单的话表达最明白的意思**[2]**

- 文字是无声的演讲，要达到的文本效果：清晰，连贯，简明[1]

1. 作者：阿偏
   链接：https://www.zhihu.com/question/29519513/answer/86828412
2. 作者：返朴
   链接：
   https://www.zhihu.com/question/29519513/answer/1747191199

逻辑

- 写科研论文，最重要的是**逻辑**。逻辑的形成来自对实验数据的总体分析
  - 先整理出清晰的思路，按照思路写一个以 subheading 为主的框架
  - 按照思路来做大纲和图
  - 最后才动笔，第一稿主要留心逻辑（logic flow），注意前后句的逻辑关系、相邻两段的逻辑关系

作者：返朴
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逻辑为王

- 论证的逻辑
  - 层次感，而不是平面感，能用递进因果，不用并列
  - 缜密的逻辑推理和逻辑证明，而不是碎片化
  - 科学性，而不是宣传性
  - 学理性，而不是口语化
  - 严谨性，而不是随意性（严禁学术造假）
  - 围绕核心问题展开论证，而不是学术散文天马行空

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总分总结构

The newly designed microarrays yielded high specificity, sensitivity, and reproducibility in detecting the prevalent carbapenemase genes in the antibiotic-resistant bacterial strains. Unlike the conventional CLSI methods that are disadvantaged by false negative/positives, the microarray method could effectively minimize the false hybridization signals because the technique is based on DNA hybridization process, which is highly specific due to the requirement of perfect base pair matches. **1.On the one hand**, our study has shown that the <u>highly specific</u> microarrays can simplify the protocol to determine the cabapenem-resistant genes in the clinical samples, and offer an efficient means for studying the molecular epidemiology of cabapenemase genes – the emergence of the resistant genes may potentially be traced back to their origins where community- and hospital-based bacterial infections are frequently happening. As such, we can have insightful understanding on the mechanisms accounting for the proliferation, evolution, and mutagenesis of the resistant genes under antibiotic selections. **2. On the other hand**, microarray hybridization is <u>highly sensitive</u>. In this study, we incorporated either Cy3 dye or biotin into the PCR-amplified DNAs that are to be hybridized onto the microarray probes. The fluorescence-based strategy guaranteed the high sensitivity of microarray detection. In our study, we could detect as low as 30 copies/μL of DNA targets. **3.Furthermore**, the DNA microarrays can generally detect target DNAs with <u>larger dynamic ranges</u>. In our case, we reason that with modifications in hybridization conditions and concentrations of spotted probes, we could further augment the detection range. **4.Finally**, the microarray method is also <u>highly reproducible</u> – we have shown that the averaged coefficients of variations (CV %) for inter-chip and intra-chip experiments were low, and most of them were less than 10%. **Therefore, we propose that the new microarray method has a great potential to be applied to clinical studies.**

起承转合

T cells play a central role in the cell-mediated immunity. **But** many cancer cells can escape the surveillance of the T cells by sculpting a microenvironment that suppresses the activity, survival or migration of the T cells, disguising them from the detection of the immune system. **Interestingly**, in immunotherapy, cytotoxic T cells can be manipulated to recognize tumor-specific antigens. When infused into a patient, the engineered T cells actively attack and destroy the tumors displaying the antigens. **As a result**, it is compelling to track the engineered T cells *in vivo* in a real-time manner to evaluate the efficacy of immunotherapy.

仿写

- 照葫芦画瓢
  - 领域有它内在的写作规律。科研文章里的一些话是定式
  - 在向别人学习时，切忌抄袭。在美国一些机构，连续7个英文单词在一起和别人的完全一样，原则上就被认为抄袭（plagiarism）

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论文结构

- Title

- Abstract

- Introduction

- Previous Work

- Our Work/Method/Algorithm

- Experiments/Case Study/User Study

- Discussion

- Conclusion

- References

- Others

从前至后
读的细的人越来越少
专业性越来越强

论文结构

- Title——论文题目
  - 选题
  - 内容表达方式
    - 题目不宜太长，表达要精准
    - 核心概念不宜多，最多两个，最好一个

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论文结构

- Abstract——对自己工作及其贡献的总结
  - 阐述问题所在
  - 说明自己的解决方案和结果
  - 说明方法的扩展价值

论文结构

- Introduction——背景，以及文章的大纲
  - 题X是重要的
  - 前人的工作A、B曾经研究过这个问题
  - A、B有一些缺陷
  - 我们提出了方法D
  - D的基本特征，和A、B进行比较
  - 实验证明D比A、B优越
  - 文章的主要贡献
  - 文章的基本结构，大纲

转自一位清华师兄的SCI论文写作心得
知乎 https://zhuanlan.zhihu.com/p/23921399

论文结构

- Previous Work——说明自己与前人的不同
  - 将历史上前人的工作分成类别
  - 对每项重要的历史工作进行简短的回顾(一到几句)，注意要客观正确
  - 和自己提出的工作进行比较，
  - 不要忽略前人的重要工作，要公正评价前人的工作，不要过于苛刻
  - 强调自己的工作和前人工作的不同，最好举出各自适用例子

工作对比

- 阐述自己的优势/优点，而不是攻击评判别人的缺陷
  - 比如描述在特定领域的优势，并不适用于其他场景

  Our study had a considerably larger and more homogeneous patient population.

  Unlike our study, a previous trial showed that drug B was effective. However, unlike the previous trial, our study group included a high proportion of patients with advanced disease. This difference in patient groups may account for the different results.

  –解螺旋SCI写作

论文结构

- Our Work/Method/Agorithm——描述自己的工作
  - 从读者角度阐明定义和表示法
  - 提供方法的结构、流程
  - 提供算法的伪码，图解和相应解释
  - 回答读者可能提出的潜在问题

论文结构

- Experiments/Results/User Study/Case Study/Evaluation——验证提出的方法和思路
  - 合理地设计实验（简洁的实验和详尽的实验步骤，不同侧面的验证目的）
  - 实验结果展示与说明
  - 必要的比较，突出科学性
  - 讨论，说明结果的意义
  - 给出结论
  - 表格、图片和数据

论文结构

- Discussion——评价论文的工作，明确工作的价值
  - 把"结果"中展示的证据线索和"引言"中的背景资料关联起来
  - 重申一下"引言"中提出的研究问题和假设
  - 总结一下你的主要研究结果，不要和Results部分重复
  - 回顾前人文献,找到自己研究与前人工作的联系,对工作做进一步的阐释，分析解释局限性
  - 简要复述主要研究结果及其重要性，展望未来，从自己工作出发对研究方向进行推进

http://wap.sciencenet.cn/blog-288924-984201.html?mobile=1

局限性分析

- 向别人展示你已经意识到局限性 —— 但不是"critical"错误。

- 提前预知审稿人可能的意见，并加以解释 —— 有助于审稿过程

- 技巧性论证limitations —— perceived limitations may not be actually "limitations"

解螺旋SCI写作

论文结构

- Conclusion——总结、前景及结文
  - 快速简短的总结
  - 论文的不足与适用场景
  - 未来工作的展望
  - 与Abstract不同重点

论文结构

- References——对相关重要背景文献的全面引用
  - 选择引文（众所周知的结论不必引用，其他人的工作要引用）
  - 本领域重要的工作
  - 与前文保持一致
  - 按照投稿格式
- Others——致谢、附录、脚注。

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知乎 https://zhuanlan.zhihu.com/p/23921399

文献梳理和文献的使用

- 文献梳理
  - 梳理选题的历史发展脉络
  - 充分肯定前人所做的学术贡献
  - 最根本的目的是发现前人研究中的问题，从而为自己的研究找到突破口
- 如何梳理文献
  - 选择有代表性的文献
  - 选择有代表性的作者的论文
  - 选择研究的视角来梳理文献

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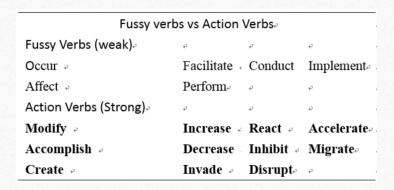https://zhuanlan.zhihu.com/p/36164758

文献梳理和文献的使用

- 所用文献与所引用观点具有一致性
- 常见错误
  - 在文献上凑数，文献堆砌
  - 文献与所引用的观点属于张冠李戴
  - 绝大多数是自引文献，回避其他学者的研究
  - 用网络文献、报纸文献
  - 文献信息有误

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一些注意事项

- 重复用词&同义词
- 长句子&过多修饰&各种从句
- 名词化&复杂名词短语
- 被动语态&主动语态
- 弱动词&模糊动词
- 行话、术语

Fussy verbs vs Action Verbs			
Fussy Verbs (weak)			
Occur	Facilitate	Conduct	Implement
Affect	Perform		
Action Verbs (Strong)			
Modify	**Increase**	**React**	**Accelerate**
Accomplish	**Decrease**	**Inhibit**	**Migrate**
Create	**Invade**	**Disrupt**	

论文英语的五个特征 - 阿偏的文章
https://zhuanlan.zhihu.com/p/28451036

动词"名词化"

KAP1 silencing in breast cancer cells caused reduced proliferation and inhibition of cell growth …

KAP1 silencing in breast cancer cells reduced proliferation and inhibited cell growth …

This study demonstrates significant relevance to …

This study is significantly related/relevant to …

解螺旋SCI写作

问题：写科研论文时应该用过去时还是现在时？

- Introduction: 描述一个现象或事实时——现在时；描述别人的工作——过去时；复述别人的结论——现在时

- Materials and methods: 过去时

- Results: 描述实验过程——过去时；描述实验现象——过去时

- Discussion: 描述本研究的结果——过去时；其余同Introduction

- Conclusion: 描述本研究的结论——现在时

- 一般说来，一个段落中时态一般保持一致，不宜混用。

优秀论文的要素

- 正确选题
- 合适的切入点
- 说清自己的贡献
- 可靠的/可重现的结果/可重复的过程
- 好的文章结构和逻辑流程
- 简洁明了
- 精选的参考文献

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知乎 https://zhuanlan.zhihu.com/p/23921399

优秀论文的误区

- Idea越多越好

- 一味追求革命性的，突破性的成果/追求最好，史无前例

- 数学、理论和公式越复杂越好

- 显示权威性，引文中大量引用自己的论文。

学术道德

- 遵守学术规范，信守学术道德
  - 严禁抄袭剽窃
  - 在他人成果上署名
  - 篡改文献和数据、断章取义
  - 注释有误
  - 一稿多投

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英文论文写作资料

- 英文论文写作有哪些需要注意的细节？ - 知乎
  https://www.zhihu.com/question/46825717

- Wayne's Updating Academic-Writing-Booklist（ WAWB）2.0 Wayne学术写作书单2.0版 - 阿偏的文章 - 知乎
  https://zhuanlan.zhihu.com/p/27646022

- 如何提高学术方面的英语水平，尤其是论文写作？ - 知乎
  https://www.zhihu.com/question/29519513

- 同义词网站：https://www.thesaurus.com/

参考书

- 1、English for Writing Research Papers 2011 Adrian Wallwork
- 2、How to Write Papers That Get Cited and Proposals That Get Funded 2011 Joshwa Schimel
- 3、They Say I Say The Moves That Matter in Academic Writing (Third Edition) 2014 Gerald Graff Cathy Birkenstein
- 4、Line by line how to edit your own writing 1985 Houghton Mifflin
- 5、Style- Toward Clarity and Grace 1990 Joseph M. Williams and Gregory G. Colomb
-

作者：阿偏
链接：https://www.zhihu.com/question/29519513/answer/86828412

作业

- 分析一篇文章
  - 什么领域的工作、当前方法的问题是什么，采用什么方法，得到什么结果
  - 创新是什么
  - 文章结构构成，各部分的写作逻辑是什么
  - 文章的优点和缺点分析
  - 一些可用的写作与逻辑定式的总结和摘抄
- 本周日提交