



IEEE科技論文英文寫作淺析

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IEEE大中華區客戶與資訊經理

上期回顧——投稿IEEE期刊還是會議？

- 期刊文章是研究工作和最終結果的完整展示
 - 展示原創研究結果
 - 做出清晰推論，並輔以資料支援
- 會議文章可以是正在進行沒有完成的研究
 - 可展示初期成果或強調最近工作
 - 獲得非正式回饋用於後續研究
- 會議論文通常短於期刊論文，細節和參考文獻也少些

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上期回顧——期刊詳情與投稿

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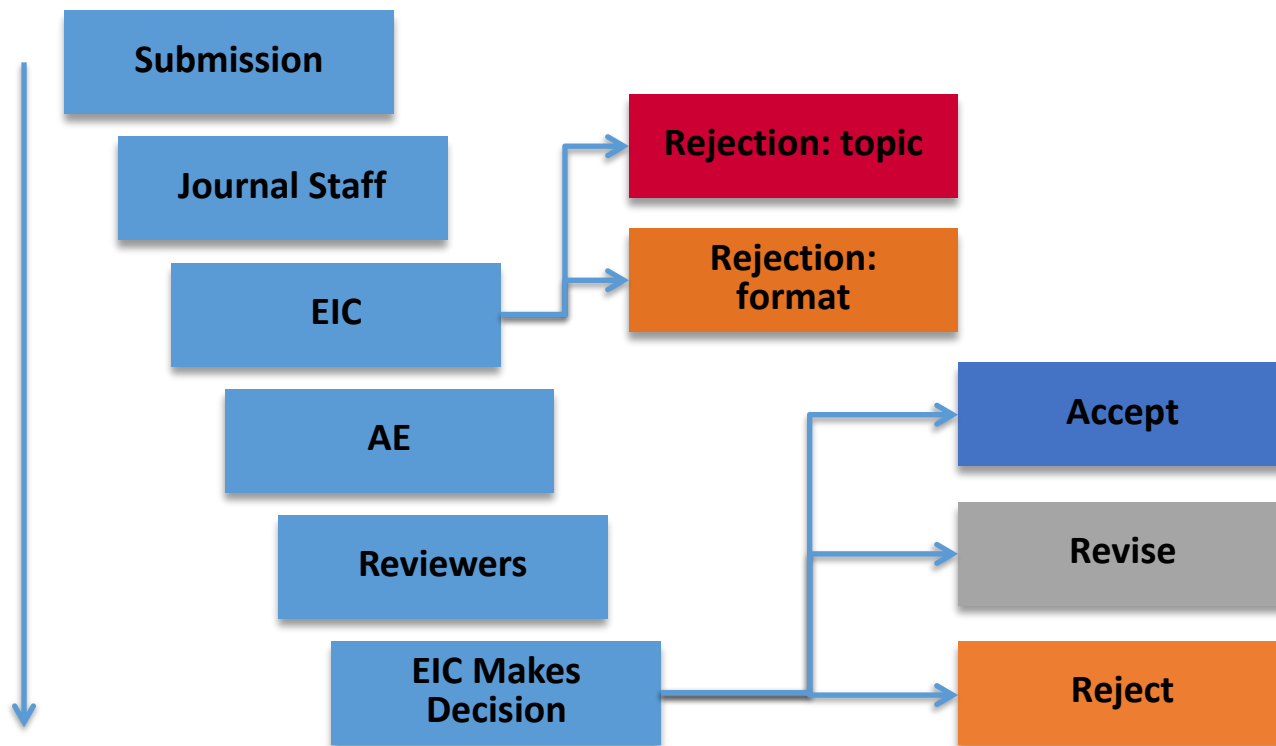
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IEEE Internet of Things (IoT) Journal publishes articles on the latest advances, as well as review articles, on the various aspects of IoT. Topics include IoT system architecture, IoT enabling technologies, IoT communication and networking protocols such as network coding, and IoT services and applications. Examples are IoT demands, impacts, and implications on sensors technologies, big data management, and future Internet design for various IoT use cases, such as smart cities, smart environments, smart homes, etc. The fields of interest include: IoT architecture such as things-centric, data-centric, service-oriented IoT architecture; IoT enabling technologies and systematic integration such as sensor technologies, big sensor data management, and future Internet design for IoT; IoT services, applications, and test-beds such as IoT service middleware, IoT application programming interface (API), IoT application design, and IoT trials/experiments; IoT standardization activities and technology development in different standard development organizations (SDO) such as IEEE, IETF, ITU, 3GPP, ETSI, etc.

IEEE

上期回顧——評審流程 Review Process



上期回顧——投稿注意事項

- ▶ Authorship (and Acknowledgements) 作者與致謝
- ▶ Multiple Authors 多作者
- ▶ Plagiarism 剽竊
- ▶ Duplicate Submission 重複投稿、一稿多投
- ▶ Reuse of Published Materials 已出版材料的再使用
- ▶ Fabrication or Falsification 學術造假

本期主題

- 科技論文結構淺析
- IEEE論文格式要求
- 拒稿小議

IEEE編輯和評審人拒稿原因

- ▶ The content is not a good fit for the publication (out-of-scope). 內容不適合該期刊
- ▶ There are serious scientific flaws: 嚴重的科學缺陷
- ▶ Inconclusive results or incorrect interpretation 無法信服的結果或不正確的解釋
 - Fraudulent research 學術造假
 - It is poorly written. 文筆差
- ▶ It does not address a big enough problem or advance the scientific field. 沒有解決重大問題或提升當前科技水準
- ▶ The work was previously published (high similarity score). 研究之前已經出版過
- ▶ The quality is not good enough for the journal. 品質沒有達到期刊要求
 - Examples of poor quality: high similarity score, short-length, aesthetics (poor presentation or writing), lack of mathematics and figures
- ▶ Reviewers have misunderstood the article. 評審人誤解文章

科技論文主體結構

Title 題目

Abstract 文摘

Keywords 關鍵字

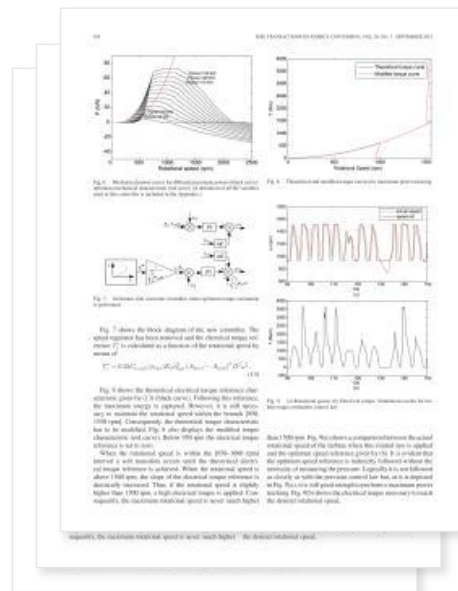
Introduction 引言

Methodology 方法

Results/Discussions/Finding
s 結果與分析

Conclusion 總結

References 參考文獻



題目

好的題目應該

- 回答讀者問題 “這篇文章與我相關嗎？”
- 抓住讀者興趣
- 簡潔描述文章內容
 - 簡潔
 - 使用關鍵字
 - 避免行業術語



INVITED
PAPER

Taking the Human Out of the Loop: A Review of Bayesian Optimization

The paper introduces the reader to Bayesian optimization, highlighting its methodical aspects and showcasing its applications.

By BOBAK SHAHRIARI, KEVIN SWERSKY, ZIYU WANG, RYAN P. ADAMS, AND NANDO DE FREITAS

ABSTRACT | Big Data applications are typically associated with systems involving large numbers of users, massive complex software systems, and large-scale heterogeneous computing and storage architectures. The construction of such systems involves many distributed design choices. The end products (e.g., recommendation systems, medical analysis tools, real-time game engines, speech recognizers) thus involve many tunable configuration parameters. These parameters are often specified and hard-coded into the software by various developers or teams. If optimized jointly, these parameters can result in significant improvements. Bayesian optimization is a powerful tool for the joint optimization of design choices that is gaining great popularity in recent years. It promises greater automation so as to increase both product quality and human productivity. This review paper introduces Bayesian optimization, highlights some of its methodological aspects, and showcases a wide range of applications.

KEYWORDS | Decision making; design of experiments; optimization; response surface methodology; statistical learning

I. INTRODUCTION

Design problems are pervasive in scientific and industrial endeavours: scientists design experiments to gain insights

into physical and social phenomena, engineers design machines to execute tasks more efficiently, pharmaceutical researchers design new drugs to fight disease, companies design websites to enhance user experience and increase advertising revenue, geologists design exploration strategies to harness natural resources, environmentalists design sensor networks to monitor ecological systems, and developers design software to drive computers and electronic devices. All these design problems are fraught with choices, choices that are often complex and high dimensional, with interactions that make them difficult for individuals to reason about.

For example, many organizations routinely use the popular mixed integer programming solver IBM ILOG CPLEX¹ for scheduling and planning. This solver has 76 free parameters, which the designers must tune manually—an overwhelming number to deal with by hand. This search space is too vast for anyone to effectively navigate.

More generally, consider teams in large companies that develop software libraries for other teams to use. These libraries have hundreds or thousands of free choices and parameters that interact in complex ways. In fact, the level of complexity is often so high that it becomes impossible to find domain experts capable of tuning these libraries to generate a new product.

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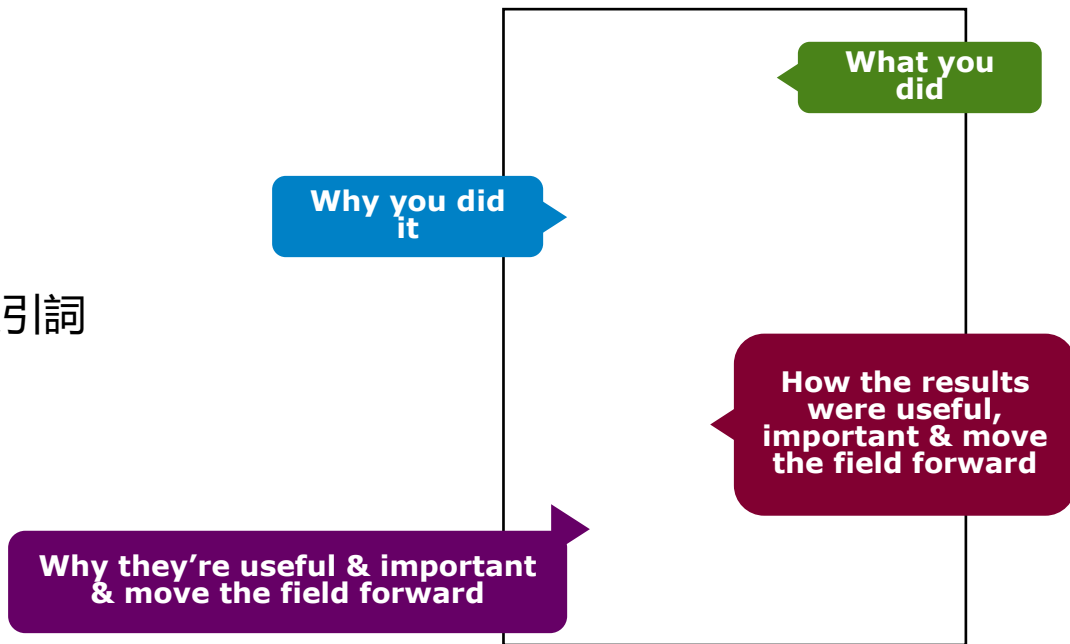
VS

A better approach of managing environmental and energy sustainability via a study of different methods of electric load forecasting

文摘

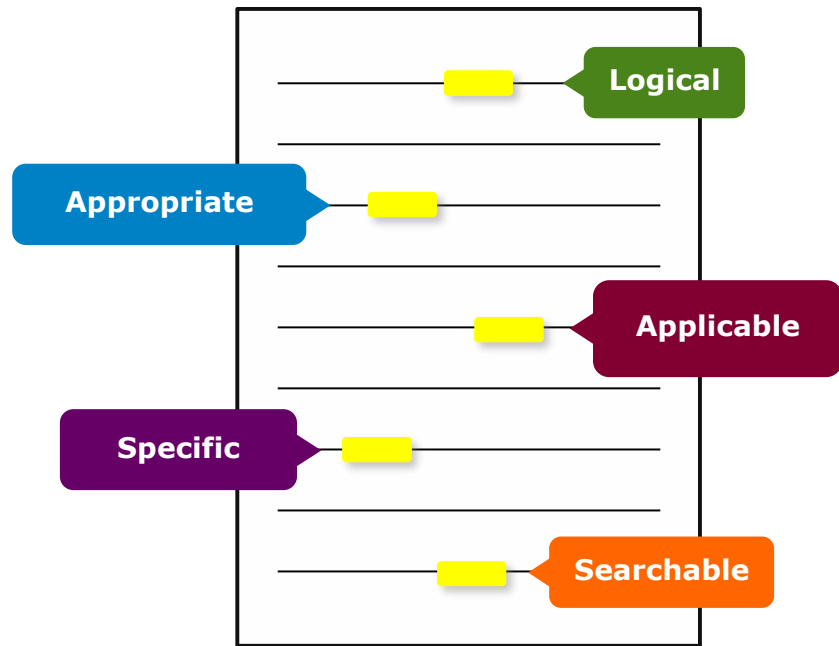
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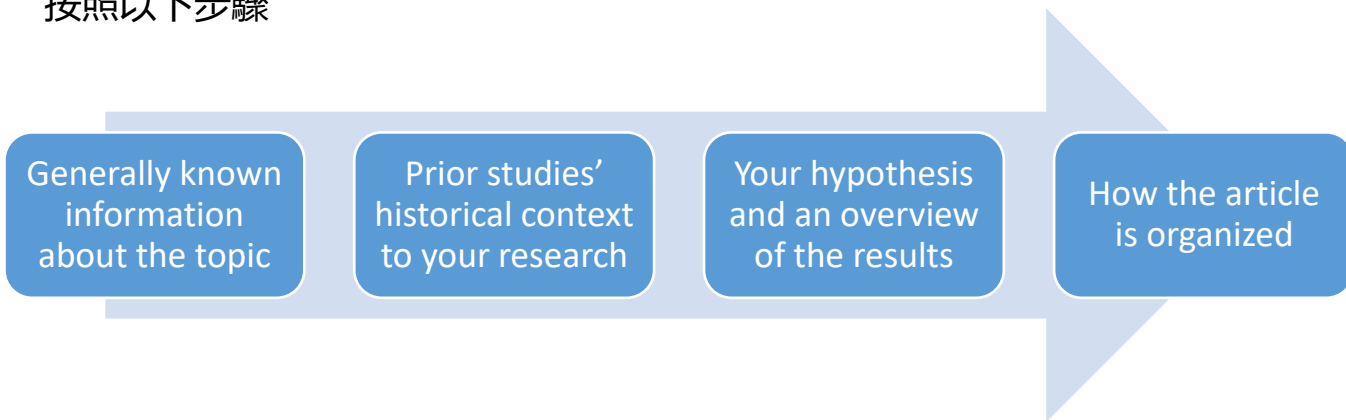
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引言

- 描述研究問題
- 按照以下步驟



- 引言不應該
 - 太寬泛或太模糊
 - 超過2頁
- 以現在時撰寫

方法

- 問題構想以及解決問題，證實或否證假想的過程
- 使用圖解闡釋想法並支援結論

Tables
Present representative data
or when exact values are important
to show



Figures
Quickly show ideas/conclusions
that would require detailed
explanations



Graphs Show relationships
between data points
or trends in data



結果/討論

證明你解決問題或作出重大貢獻

結果：總結資料

- 應該清晰簡潔
- 使用表格圖解配合文字解釋結果

討論：闡釋結果

- 為什麼研究提出了一個新方案
- 列出研究缺陷

Discussion

the SC algorithm over the whole range of w values increase to 3–4 K, except for the TIR₁₀₁₁ database, with an RMSE of 2 K. This last result is explained by the w distribution, which is biased toward low values of w in this database. When only atmospheric profiles with w values lower than 3 g cm^{-2} are selected, the SC algorithm provides RMSEs around 1.5 K, with almost equal values of bias and standard deviation, around 1 K in both cases (with a negative bias, thus the SC underestimates the LST). In contrast, when only w values higher than 3 g cm^{-2} are considered, the SC algorithm provides RMSEs higher than 5 K. In these cases, it is preferable to calculate the atmospheric functions of the SC algorithm directly from (3) rather than approximating them by a polynomial fit approach as given by (6).

V. DISCUSSION AND CONCLUSION

The two Landsat-8 TIR bands allow the implementation of two LST retrieval methods based on different physical assumptions, such as the SC (only one TIR band required) algorithm (two TIR bands required). Direct inversion of the transfer equation, which can be considered as a “ground-truth” condition, is assumed to be a “ground-truth” condition that the information about the surface and w is accurate enough. The SC algorithm is the latter in a continuation of the previous SC developed for Landsat-4 and Landsat-5 TM sensors, and the new EIM-6 sensor on board the Landsat-9 platform [9], and it could be used to generate consistent LST products from the historical Landsat data using a single algorithm. An advantage of the SC algorithm is that, apart from surface emissivity, only water vapor content is required as input. However, it is expected that sensors on LST becoming conceivable for high water vapor contents (e.g., $w > 3 \text{ g cm}^{-2}$). This problem can be partly solved by computing the atmospheric functions directly from τ , w , and S_{WV} values [see (5)], or also by including air temperature as input [15]. A main advantage of the SW algorithm is that it performs well over global conditions and, thus, a wide range of water vapor values; and that it only requires water vapor as input (apart from surface emissivity of the two TIR bands). However, the SW algorithm can be only applied to the new Landsat-8 TIRS data, since previous TM/EIM sensors only had one TIR band.

The LST algorithms presented in this letter were tested with simulated data sets obtained for a variety of global atmospheric conditions and surface emissivities. The results showed RMSE values of typically less than 1.5 K, although for the SC algorithm, this accuracy is only achieved for w values below 3 g cm^{-2} . Algorithm testing also showed that the SW errors are lower than the SC errors for increasing water vapor, and vice versa, as demonstrated in the simulation study presented in Schönau and Finnén-Munoz [18]. Although an extensive validation exercise from *in situ* measurements is required to assess the performance of the two LST algorithms, the results obtained for the simulated data, the sensitivity analysis, as well as the previous findings for algorithms with the same mathematical structure give confidence in the algorithm accuracies estimated here.

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總結

- 解釋研究達到何種效果
 - 與引言所闡述的問題關聯
 - 重新回顧每個部分關鍵點
 - 包括重要發現、重要結論和推論的總結
- 提供以下優缺點
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- 建議未來研究方向

SECTION IX. CONCLUDING REMARKS

In this paper, we have introduced Bayesian optimization from a modeling perspective. Beginning with the beta-Bernoulli and linear models, and extending them to nonparametric models, we recover a wide range of approaches to Bayesian optimization that have been introduced in the literature. There has been a great deal of work that has focused heavily on designing acquisition functions; however, we have taken the perspective that the importance of this plays a secondary role to the choice of the underlying surrogate model.

In addition to outlining different modeling choices, we have considered many of the design decisions that are used to build Bayesian optimization systems. We further highlighted relevant theory as well as practical considerations that are used when applying these techniques to real-world problems. We provided a history of Bayesian optimization and related fields and surveyed some of the many successful applications of these methods. We finally discussed extensions of the basic framework to new problem domains, which often require new kinds of surrogate models.

Although the underpinnings of Bayesian optimization are quite old, the field itself is undergoing a resurgence, aided by new problems, models, theory, and software implementations. In this paper, we have attempted to summarize the current state of Bayesian optimization methods; however, it is clear that the field itself has only scratched the surface and that there will surely be many new problems, discoveries, and insights in the future.

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- ▶ 投稿前提供回饋意見的同行

ACKNOWLEDGMENT

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參考文獻

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cited
material

We then have

$$\begin{aligned} (P_t^{n+} + P_t^{m+}) - (P_t^{n+} - P_t^{m+})^2 + 4P_t^{n+} P_t^{m+} \\ < (P_t^{n+} - P_t^{m+})^2 + 4P_t^{n+} P_t^{m+} \\ - (P_t^{n+} - P_t^{m+})^2 \end{aligned} \quad (32)$$

Since $P_t^{n+} - P_t^{m+} = P_t^{n+} - P_t^{m+}$, we then have $P_t^{n+} < P_t^{m+}$, and $P_t^{n+} < P_t^{m+}$. Because the operational cost is an increasing function of $\{P_t^{n+}, P_t^{m+}\}$, we obtain that

$$c_{i/n}(P_t^{n+}, P_t^{m+}) < c_{i/n}(P_t^{m+}, P_t^{n+}). \quad (33)$$

Therefore the optimal pair $\{P_t^{n+}, P_t^{m+}\}$ must satisfy that $P_t^{n+} P_t^{m+} = 0$, i.e., only one of P_t^{n+}, P_t^{m+} can be non-zero. ■

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Pung Yang (S'11) received the B.Sc. degree in electrical engineering from University of Science and Technology, Anhui, China in 2009, and the M.Sc. and Ph.D. degrees in electrical engineering from Washington University in St. Louis, St. Louis, MO, USA, in 2011 and 2014, respectively. His Ph.D. advisor is Dr. Arve Nehorai. His research interests include statistical signal processing, optimization, machine learning, and compressive sensing, with applications to smart grids.



Arve Nehorai (S'80–M'83–SM'90–F'94) received the B.Sc. and M.Sc. degrees from the Technion, Haifa, Israel, and the Ph.D. degree from Stanford University, Stanford, CA, USA. He is the Eugene and Martha Lohman Professor and Chair of the Preston M. Gross Department of Electrical and Systems Engineering (ESE) at Washington University in St. Louis (WUSTL), St. Louis, MO, USA. Earlier, he was a faculty member at Yale University and the University of Illinois at Chicago. Dr. Nehorai served as Editor-in-Chief of IEEE TRANSACTIONS ON SIGNAL PROCESSING from 2000 to 2002. From 2003 to 2005 he was the Vice President of the IEEE Signal Processing Society (SPS), the Chair of the Publications Board, and a member of the Executive Committee of this Society. He was the founding Editor of the special column on Leadership Reflections in IEEE Signal Processing Magazine from 2003 to 2006. He has been a Fellow of the IEEE since 1994, the Royal Statistical Society since 1990, and the AAAS since 2012.

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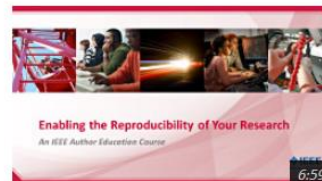
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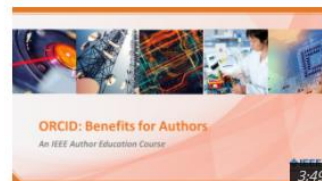
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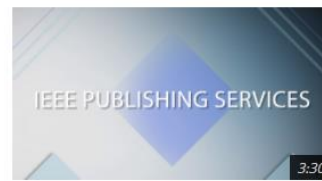
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