PathFinder: AI Enhanced Resume

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*Abstract*—Pathfinder is an AI-enhanced resume generation system that automates the creation of personalized resumes through user input and template selection. Utilizing a large language model (LLM) and a section-wise vector store from existing resumes, the system incorporates Retriever-Augmented Generation (RAG) and few-shot prompting to enhance content relevance and precision. An interactive chatbot further allows users to customize their resumes dynamically, improving their job-seeking tools' efficiency and effectiveness. Keywords—RAG, LLM

# Introduction

## Objective and Scope

The primary objective of "Pathfinder" is to automate and personalize the resume creation process using advanced AI technologies. This system is designed to assist job seekers in generating resumes that are not only tailored to their individual profiles but also aligned with industry requirements. By leveraging AI , Pathfinder seeks to remove the common barriers associated with traditional resume building, such as the need for technical knowledge in document formatting and content optimization.

## Background

Creating a compelling resume is a critical step in the job application process, yet many applicants struggle with effective resume composition. Traditional methods of resume creation involve a steep learning curve, including mastery of formatting tools like LaTeX and the ability to write impactful content. Pathfinder addresses these challenges by integrating AI-driven tools that automate these processes, thus making professional assistance more accessible to all job seekers.

# Methodology

## SYSTEM OVERVIEW

The system functions by taking user inputs through an interactive chatbot interface, processing these inputs using a combination of large language models and retrieval techniques, and ultimately generating a tailored, professional resume in both LaTeX and PDF formats.

## INPUT AND INFERENCE

User Interaction: Users interact with the system via a chatbot. This interface guides them through a structured data collection process, where they input personal information, educational background, work experience, and skills in a user-friendly form. Additionally, the user can input entire resume text directly and ask the chatbot to customise it.

Data Handling: Inputs received from users are systematically validated for completeness using pydantic and formatted in json for processing. This data serves as the base for content generation.

## Use of Large Language Models

At the core of "Pathfinder" is a large language model, specifically fine-tuned for the task of resume writing. This model uses the inputs to generate coherent and contextually appropriate text that fits professional standards. In the Chatbot users are given an option to choose a model of their choice as well as enter their API key depending upon the model chosen.

Large Language Models (LLMs) are advanced implementations of neural networks specifically designed to process, understand, and generate human language, building on the transformer architecture that allows for handling sequences of data with high efficiency. These models operate on the principle of deep learning, utilizing vast numbers of parameters—sometimes in the billions. Fundamental to their operation is tokenization, a process where text is segmented into manageable units known as tokens, which can be words, parts of words, or even punctuation. LLMs are trained on massive datasets compiled from a broad range of sources, enabling them to develop a deep understanding of linguistic structures, context, and semantics, which allows them to perform tasks ranging from simple text classification to complex content generation. designations. Post initial training, these models often undergo fine-tuning, a targeted learning process where the model's parameters are slightly adjusted to optimize performance for specific tasks or industries.

The effectiveness of LLMs in "Pathfinder" relies heavily on their ability to perform both Natural Language Understanding (NLU) and Natural Language Generation (NLG). NLU is critical for accurately interpreting the user's input data, discerning their intentions, and extracting relevant details that need to be emphasized in a resume. NLG, on the other hand, involves crafting sentences that are not only syntactically correct and stylistically polished but also customized to reflect the user's unique professional profile.

## Prompt Engineering

Prompt engineering is a technique used to guide the output of Large Language Models (LLMs) by carefully crafting the inputs or "prompts" given to the model. This approach is crucial for tailoring the model's responses to specific tasks or contexts, ensuring that the generated text meets predefined criteria for style, tone, and relevance.

In our system, few-shot prompting is employed as a refined method of prompt engineering. This technique involves providing the LLM with a small number of example tasks or outputs (shots) to guide its generation process. For "Pathfinder", few-shot prompting is integrated into the workflow by using the top retrievals from the vector store as exemplars. These retrieved documents form a basis for the prompts, which are then enhanced with user-specific data to produce personalized and contextually appropriate resume content. Few-shot prompting is particularly advantageous in scenarios where rapid adaptability to new formats or updates in content style is necessary. It allows for quick modifications to the model's output without the need for extensive retraining, thereby saving time and computational resources.

Additionally, "Pathfinder" employs expert prompting, a refined form of prompt engineering where the model is instructed to assume the role of an expert in a specific field—in this case, a career advisory expert. This technique involves configuring the LLM to operate within a predefined expertise framework, which for "Pathfinder", means adhering to the standards and guidelines typical of professional resume writing. By informing the model that it is assisting career advisors at a prestigious institution, it is steered to rewrite resume content to be more concise, compelling, and aligned with best practices in resume and cover letter creation. Thus, Expert Prompting allows for a high level of specificity in the model's output.

## Embeddings

Embeddings are dense vector representations of text that capture semantic meanings, enabling machines to understand and quantify relationships between words and passages. These vectors are generated using models such as Word2Vec, GloVe, and BERT, which learn from large text corpora to produce embeddings that reflect both local and global context within language. The goal is for proximity in the vector space to mirror semantic or contextual similarity. So embeddings for synonyms should have high cosine similarity, while unrelated terms should be farther apart. Indexing refers to structures and algorithms that allow efficient retrieval and storage of data.Finding the most similar embedding for a query vector among billions of candidates is computationally intensive. Approximate Nearest Neighbor (ANN) algorithms address this by balancing speed and precision, limiting comparisons to the most likely candidates using advanced data structures and vector quantization. Leading ANN libraries like Faiss, Annoy, and ScaNN facilitate rapid similarity searches, enhancing efficiency in large-scale applications.

In our system, embeddings are essential for organizing and retrieving data efficiently within a vector store. Utilizing the open source FAISS library, "Pathfinder" enhances these operations with fast, accurate similarity searches, facilitating real-time resume customization and optimization based on semantic relevance.

## Vector Store

A vector store is a specialized database designed to manage and retrieve high-dimensional vector data efficiently. It stores embeddings—dense vector representations of text that encapsulate semantic meanings—enabling the system to perform semantic searches based on content similarity. This is crucial in applications where rapid and accurate retrieval of information from large datasets is required.

In our system, the vector store is crucial for managing and retrieving high-dimensional vector data efficiently. It primarily contains a curated database of resumes from seniors at the Indian Institute of Technology Guwahati (IITG). Each resume in the "Pathfinder" database is segmented into distinct sections such as Experience, Education, Skills, and Achievements. This segmentation allows for targeted searches that align closely with the specific needs and queries of users. For example, if a user needs to enhance the Education section of their resume, "Pathfinder" can directly query the relevant part of the vector store to find the best content snippets from similar profiles.

To further optimize retrieval and relevance, each section is not only stored as an embedding but also tagged with descriptive metadata. Metadata typically includes details like the branch of study, company name and job role. This metadata is used to title the documents as BRANCH\_COMPANY\_ROLE, which facilitates more granular searches and filtering within the vector store.

By using techniques like vector quantization and indexing, FAISS handles the vast quantities of data in the vector store with minimal latency.

## Top K Retrieval

Top K Retrieval is a process in the "Pathfinder" system, where it leverages the vector store to identify and extract the most relevant resume sections based on user input. When a user provides their professional details, the system converts this data into a query vector. This vector is then used to perform a similarity search across the vector store, employing cosine similarity metrics to find the 'K' closest matches. These top matches represent the most semantically similar resume sections, which are then used to generate personalized content, ensuring that the final resume is both precise and tailored to the user’s specific career goals.

## Re Ranking

Initial ANN searches generally leverage compact codes for speed while sacrificing some accuracy. We can reclaim this by rerunning promising candidates against original vectors then rescoring for improved relevance. Say an encoded query uncovers 1000 approximate neighbors. We can pass these floats to a GPU for parallel scoring against the full vectors. Given abundant compute for reranking, we regain precision without severely impacting latency. Thus Re rank can speed up an LLM query without sacrificing accuracy (and in fact, probably improving it). It does so by pruning away irrelevant nodes from the context.

In Pathfinder we make use of Sentence Transformer Re rank. It leverages advanced sentence-level embeddings to fine-tune the relevance of each candidate section.

## Retrieval Augmented Generation

Retriever-Augmented Generation (RAG) is a sophisticated method that combines the strengths of information retrieval and neural network-based generation to produce highly relevant and contextually appropriate content. This method involves two main stages: first, a retrieval component (the retriever) identifies relevant documents or data fragments based on a given query; then, a generator component uses the context and information from the retrieved data to synthesize coherent and contextually appropriate new text. The integration of these two processes allows RAG to leverage both the extensive information contained in large databases and the creative flexibility of generative models, producing outputs that are both informationally rich and finely tailored to specific needs.

In the "Pathfinder" system, RAG is crucial for crafting personalized resumes that effectively reflect the user's professional background and aspirations. The process begins with the retriever, which searches through a vector store of pre-existing resume sections. This store, populated with data segmented by relevance and tagged with metadata, allows "Pathfinder" to pull the most pertinent sections based on semantic similarity to the user's inputs. These inputs might include job history, skills, educational background, and specific achievements, which are all converted into query vectors and matched against the embeddings in the vector store.

Once the top matches are retrieved, the generator takes over. It incorporates the selected resume fragments as a scaffold, adding and modifying elements to produce a unique and cohesive resume. This generative step not only adapts the retrieved content to better fit the user's current needs but also ensures that the language and presentation are up-to-date with current professional standards.

## Latex Code Generation

The final step of the resume creation process involves generating LaTeX code, which is key to producing high-quality, professionally formatted resumes. Once the content of the resume has been finalized through the retrieval and generation processes, the system converts this content into LaTeX format. This conversion involves mapping the structured content — including headings, subheadings, bullet points, and text — into LaTeX commands and environments. This process is automated within "Pathfinder," ensuring that the layout adheres to professional and aesthetic standards without requiring manual coding from the user. A template containing the format of the resume in Latex is part of the code files and passed as a prompt to the LLM.The final output provided by "Pathfinder" is a LaTeX file that can be compiled into a PDF document.

## Further Customisation

"Pathfinder" is designed to support ongoing user engagement and customization, enabling users to suggest changes and refine their resumes even after the initial generation. The interactive chatbot interface plays a crucial role. Users can easily suggest alterations, such as rephrasing descriptions, adding new sections, or adjusting the formatting, all via simple conversational inputs.

# LITERATURE REVIEW

In our literature review, we delve into advanced retrieval techniques and strategies to enhance the output of large language models (LLMs). Our exploration begins with a detailed examination of various embedding models. We compare and contrast the Cohere Embedding Model and the Ollama embedding model, ultimately choosing Sentence Transformers for their robust performance in contextual understanding.

To implement these models effectively, we investigated the Huggingface Serverless API, which facilitates seamless operation of Huggingface models in a scalable cloud environment. This exploration is crucial for our project as it supports the deployment of complex models without extensive infrastructure.

Additionally, our research extends to methodologies for extracting information from PDF files—an essential capability for our application. We evaluated several tools in this domain, including PyMuPDF, pdfplumber, and pdfminer, each offering unique features and efficiencies depending on the specific needs of the task at hand.

The recent advancements in language modeling, especially with instruction-tuned LLMs, are particularly compelling. Models like OpenAI’s GPT-3.5 and GPT-4, as well as Google Deepmind’s Gemini, have not only improved on standard natural language processing tasks but also excel in complex, instruction-based scenarios. These capabilities are demonstrated through their remarkable performance across a variety of challenging applications.

Inspired by these advancements, our project aims to harness the sophisticated textual comprehension, adept instruction-following, and dynamic generation abilities of these cutting-edge LLMs. Our goal is to refine and tailor resumes with unparalleled precision, making them highly targeted and effective in the competitive job market. By integrating these technological innovations, we seek to transform the standard approach to resume development, enhancing career opportunities for job seekers everywhere.

# AnaLysis

## Sentence Transformer Re rank

Reranking involves two main steps:

Initial Ranking: First, a potentially large set of responses or passages are retrieved based on a simpler or less computationally expensive method. This could involve basic keyword matching or simpler embedding models that can quickly process large volumes of data.  
Reranking with Sentence Transformers: Once an initial set of responses is retrieved, the Sentence Transformer is used to re-rank these results. The model computes embeddings for both the query and the retrieved documents or responses. By calculating similarities between the query embedding and the retrieved document embeddings, the system can rerank the documents in order of relevance more accurately.

Results are as follows:

* Query: “Project : Online Movie Ticket Booking System : React js , Node js , XAMPP, MYSQL”  
  Retrieval Results:

Source (Doc id: 84a38b9e-b911-4f09-93e8-e553faf4ca5f): projects convoconnect web app coding club project developed a node js web application which allows group video and audio chat functionality used peerjs and socket io libraries to establish peer to ...

Source (Doc id: 4c05dc9a-932a-4bee-81b2-160eebe8844e): technical skills programming languages c c python javascript frontend reactjs nextjs bootstrap tailwind backend nodejs expressjs django jwt auth database management mongodb mysql

Source (Doc id: 782bf781-70ab-4038-b8d7-26505df0be50): projects e shopper website personal project developed an e commerce website that facilitates users to create an account or log in allow user to add update and remove the products to and from the ca…

* Query: “Probability Statistics courses studied"  
  Retrieval Results:

Source (Doc id: eab2786c-ff68-450d-8bd7-9f802e32302d): key courses taken elementary proficiency mathematics probability theory and random processes linear algebra differential equations discrete mathematics financial engineering real analysis computer ...

Source (Doc id: b7464f0c-e34d-4243-901a-0fd332820589): key courses taken computer science computer architecture organisation data structures algorithms theory and lab design analysis of algorithms database management systems theory and lab formal langu...

Source (Doc id: 01e6b637-6027-4df1-a754-1b93b725b85e): key courses taken mathematics linear algebra basic calculus probability random processes computer science data structures and algorithms

* Query: “Secretary of AI club”

Retrieval Results:

Source (Doc id: 0f6a2a51-16fa-465b-a25d-0afed2b003db): positions of responsibility secretary coding club iit guwahati branch representative data science and artificial intelligence iit guwahati member iitg ai iit guwahati coordinator coding club iit gu...

| Query | Metrics | | | |
| --- | --- | --- | --- | --- |
| Output | Latency | Tokens Used | Cost |
| Developed an advanced AI model using DistilBERT and BLIP-2, designed to accurately predict Twitter user  engagement by analyzing tweet content and media captions to estimate the number of likes.  – Crafted a sophisticated content generation system utilizing a fine-tuned Llama2 model and PaddleOCR to produce  engaging tweet text from given metadata, enhancing social media strategies.  – Integrated diverse datasets including tweet metadata and media captions to create comprehensive prompts for AI  inference, significantly improving prediction accuracy and content relevancy. | 0: "Developed an advanced AI model using DistilBERT and BLIP-2 to accurately predict Twitter user engagement based on tweet content and media captions."  1: "Crafted a content generation system utilizing a fine-tuned Llama2 model and PaddleOCR to produce engaging tweet text from metadata, enhancing social media strategies."  2: "Integrated diverse datasets including tweet metadata and media captions to create comprehensive prompts for AI inference, improving prediction accuracy and content relevancy." | 2.98 | 345 | $0.0023 |
| On July 20, 1969, the United States marked a significant achievement in the history of human exploration by successfully landing astronauts Neil Armstrong and Buzz Aldrin on the Moon. This monumental event was the result of the Apollo program, an ambitious project by NASA that began in the early 1960s, aimed at achieving superior space exploration capabilities against the backdrop of the Cold War space race with the Soviet Union | "Achieved moon landing for NASA's Apollo program in 1969, culminating space race with Soviet Union.",  "Led team that engineered and executed complex mission objectives.",  "Overcame technical challenges through innovative problem-solving." | 3.47 | 294 | 0.0016 |
| "Healthcare systems globally are undergoing significant stress due to demographic shifts, notably aging populations, and the escalating costs associated with advanced medical care. These pressures are driving the need for substantial reforms in healthcare delivery and management. Efforts are being concentrated on enhancing the efficiency of services, broadening access to healthcare through technological innovations like telemedicine, and managing the economic burden on public and private healthcare financiers | "Analyzed global healthcare trends, identifying key challenges like aging populations and rising costs of advanced care.",  "Researched solutions to improve healthcare delivery, such as enhancing service efficiency, expanding access through telemedicine, and managing financial burdens." | 2.52 | 297 | 0.0016 |
| The Frames of Freedom workshop was organized by the Coding Club on the occasion of Independence Day. It aimed to equip campus individuals with the skills necessary to create visually appealing and interactive websites. Through hands-on sessions, participants were guided through the fundamentals of web development, starting with HTML, CSS, and JavaScript basics. As the workshop progressed, attention turned to the GSAP library, which enabled the creation of dynamic animations for websites. The event saw a remarkable turnout, withthe conference hall filled to capacity and over 200 number of registrations. Certificates were awarded to participants who demonstrated active engagement and commitment till the end of the workshop. | project\_name: "Frames of Freedom"  project\_type: "Workshop"  host: "Coding Club"  start\_date: "Independence Day"  description: "Organized a hands-on workshop on web development with HTML, CSS, and JavaScript basics."  "Taught GSAP library for creating dynamic website animations."  "Witnessed over 200 registrations and a full conference hall."  "Awarded certificates to participants who actively engaged until the end." | 3.08 | 352 | 0.0024 |
| Key Components of a Healthy Diet  A diverse array of fruits and vegetables should be consumed regularly to ensure that the body gets a comprehensive range of vital vitamins and minerals for overall health.  Incorporating whole grains like brown rice and whole wheat bread provides necessary fiber and energy, supporting digestive health and sustained energy levels throughout the day.  Including a variety of lean proteins such as chicken, fish, beans, and legumes in meals to help with muscle repair and growth, vital for both daily function and physical fitness.  Minimizing the intake of refined sugars and high-saturated fats to prevent various health issues, including heart disease and obesity, promoting a balanced diet.  Staying hydrated is crucial, as water supports metabolism, affects energy levels, and is essential for cellular functions, so drinking plenty of fluids throughout the day is recommended. | resume\_section: "Healthy Diet"  description:  "Consumed diverse fruits and vegetables regularly, providing essential vitamins and minerals for overall health."  "Incorporated whole grains like brown rice and whole wheat bread, ensuring fiber intake and sustained energy."  "Included lean proteins like chicken, fish, beans, and legumes in meals for muscle repair and growth."  "Minimized refined sugars and high-saturated fats to prevent health issues like heart disease and obesity."  "Stayed hydrated by drinking plenty of fluids throughout the day, supporting metabolism and cellular functions." | 3.38 | 369 | 0.0027 |
| The global coffee industry has seen a significant shift towards sustainability in recent years, with a growing number of coffee producers and retailers committing to environmentally friendly practices. These include adopting fair trade certifications, implementing organic farming techniques, and utilizing biodegradable packaging. The movement is not only driven by consumer demand for ethically produced goods but also by the long-term benefits these practices offer to the environment and local communities involved in coffee cultivation." | job\_highlight: [  0: "Collaborated with coffee producers to implement sustainable practices like fair trade certifications, organic farming techniques, and biodegradable packaging."  1: "Engaged with retailers to promote ethically produced coffee, driven by consumer demand and long-term environmental benefits."  2: "Facilitated the adoption of sustainable practices in the coffee industry, benefiting local communities involved in cultivation."  ] | 3.50 | 326 | 0.002 |

Source (Doc id: e62488b4-2fd8-4018-8d3b-066f24b0eb53): positions of responsibility quant head finance and economics club iit guwahati mar 2023 present leading a team of 50 club members with a keen interest in quantitative finance conducting campus and

* Query: "coding challenges winner"

Retrieval Results:

Source (Doc id: 1558c4bb-8e2f-485d-9a4e-c46dfafef9c4): achievements first prize in junihers cohort for project bidkaro awarded by d e shaw india department rank 1 mathematics and computing branch desis ascend educare mentee selected among top 40 girls ...

Source (Doc id: 308805aa-1f41-43de-bca0-02809632416c): achievements amazon ml challenge 2023 achieved a rank of 40 among 5000 participants from all over india google ml bootcamp 2022 among the top 55 participants from all over india to get selected and...

Source (Doc id: 601f3e8b-f01a-4915-8b84-d2bdcbc8f7ae): leadership positions contingent leader iit guwahati inter iit technical meet 2023 present managing the entire contingent of iit guwahati of over 150 students competing in 12 challenging industry pr...

## LangFuse

* Use either SI (MKS) or CGS as primary units. (SI units are encouraged.) English units may be used as secondary units (in parentheses). An exception would be the use of English units as identifiers in trade, such as “3.5-inch disk drive”.
* Avoid combining SI and CGS units, such as current in amperes and magnetic field in oersteds. This often leads to confusion because equations do not balance dimensionally. If you must use mixed units, clearly state the units for each quantity that you use in an equation.
* Do not mix complete spellings and abbreviations of units: “Wb/m2” or “webers per square meter”, not “webers/m2”. Spell out units when they appear in text: “. . . a few henries”, not “. . . a few H”.
* Use a zero before decimal points: “0.25”, not “.25”. Use “cm3”, not “cc”. (*bullet list*)

## Equations

The equations are an exception to the prescribed specifications of this template. You will need to determine whether or not your equation should be typed using either the Times New Roman or the Symbol font (please no other font). To create multileveled equations, it may be necessary to treat the equation as a graphic and insert it into the text after your paper is styled.

Number equations consecutively. Equation numbers, within parentheses, are to position flush right, as in (1), using a right tab stop. To make your equations more compact, you may use the solidus ( / ), the exp function, or appropriate exponents. Italicize Roman symbols for quantities and variables, but not Greek symbols. Use a long dash rather than a hyphen for a minus sign. Punctuate equations with commas or periods when they are part of a sentence, as in:

*a**b* 

Note that the equation is centered using a center tab stop. Be sure that the symbols in your equation have been defined before or immediately following the equation. Use “(1)”, not “Eq. (1)” or “equation (1)”, except at the beginning of a sentence: “Equation (1) is . . .”

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* The word “data” is plural, not singular.
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* In American English, commas, semicolons, periods, question and exclamation marks are located within quotation marks only when a complete thought or name is cited, such as a title or full quotation. When quotation marks are used, instead of a bold or italic typeface, to highlight a word or phrase, punctuation should appear outside of the quotation marks. A parenthetical phrase or statement at the end of a sentence is punctuated outside of the closing parenthesis (like this). (A parenthetical sentence is punctuated within the parentheses.)
* A graph within a graph is an “inset”, not an “insert”. The word alternatively is preferred to the word “alternately” (unless you really mean something that alternates).
* Do not use the word “essentially” to mean “approximately” or “effectively”.
* In your paper title, if the words “that uses” can accurately replace the word “using”, capitalize the “u”; if not, keep using lower-cased.
* Be aware of the different meanings of the homophones “affect” and “effect”, “complement” and “compliment”, “discreet” and “discrete”, “principal” and “principle”.
* Do not confuse “imply” and “infer”.
* The prefix “non” is not a word; it should be joined to the word it modifies, usually without a hyphen.
* There is no period after the “et” in the Latin abbreviation “et al.”.
* The abbreviation “i.e.” means “that is”, and the abbreviation “e.g.” means “for example”.

An excellent style manual for science writers is [7].

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After the text edit has been completed, the paper is ready for the template. Duplicate the template file by using the Save As command, and use the naming convention prescribed by your conference for the name of your paper. In this newly created file, highlight all of the contents and import your prepared text file. You are now ready to style your paper; use the scroll down window on the left of the MS Word Formatting toolbar.

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Headings, or heads, are organizational devices that guide the reader through your paper. There are two types: component heads and text heads.

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Text heads organize the topics on a relational, hierarchical basis. For example, the paper title is the primary text head because all subsequent material relates and elaborates on this one topic. If there are two or more sub-topics, the next level head (uppercase Roman numerals) should be used and, conversely, if there are not at least two sub-topics, then no subheads should be introduced. Styles named “Heading 1”, “Heading 2”, “Heading 3”, and “Heading 4” are prescribed.

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#### Positioning Figures and Tables: Place figures and tables at the top and bottom of columns. Avoid placing them in the middle of columns. Large figures and tables may span across both columns. Figure captions should be below the figures; table heads should appear above the tables. Insert figures and tables after they are cited in the text. Use the abbreviation “Fig. 1”, even at the beginning of a sentence.

1. Table Type Styles

| Table Head | Table Column Head | | |
| --- | --- | --- | --- |
| Table column subhead | Subhead | Subhead |
| copy | More table copya |  |  |

1. Sample of a Table footnote. (*Table footnote*)
2. Example of a figure caption. (*figure caption*)

Figure Labels: Use 8 point Times New Roman for Figure labels. Use words rather than symbols or abbreviations when writing Figure axis labels to avoid confusing the reader. As an example, write the quantity “Magnetization”, or “Magnetization, M”, not just “M”. If including units in the label, present them within parentheses. Do not label axes only with units. In the example, write “Magnetization (A/m)” or “Magnetization {A[m(1)]}”, not just “A/m”. Do not label axes with a ratio of quantities and units. For example, write “Temperature (K)”, not “Temperature/K”.

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The preferred spelling of the word “acknowledgment” in America is without an “e” after the “g”. Avoid the stilted expression “one of us (R. B. G.) thanks ...”. Instead, try “R. B. G. thanks...”. Put sponsor acknowledgments in the unnumbered footnote on the first page.

##### References

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1. G. Eason, B. Noble, and I. N. Sneddon, “On certain integrals of Lipschitz-Hankel type involving products of Bessel functions,” Phil. Trans. Roy. Soc. London, vol. A247, pp. 529–551, April 1955. *(references)*
2. J. Clerk Maxwell, A Treatise on Electricity and Magnetism, 3rd ed., vol. 2. Oxford: Clarendon, 1892, pp.68–73.
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4. K. Elissa, “Title of paper if known,” unpublished.
5. R. Nicole, “Title of paper with only first word capitalized,” J. Name Stand. Abbrev., in press.
6. Y. Yorozu, M. Hirano, K. Oka, and Y. Tagawa, “Electron spectroscopy studies on magneto-optical media and plastic substrate interface,” IEEE Transl. J. Magn. Japan, vol. 2, pp. 740–741, August 1987 [Digests 9th Annual Conf. Magnetics Japan, p. 301, 1982].
7. M. Young, The Technical Writer’s Handbook. Mill Valley, CA: University Science, 1989.

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