Aria

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***Abstract*—This electronic document is a “live” template and already defines the components of your paper [title, text, heads, etc.] in its style sheet. *\*CRITICAL: Do Not Use Symbols, Special Characters, Footnotes, or Math in Paper Title or Abstract*. (***Abstract)*

***Keywords—component, formatting, style, styling, insert (****key words****)***

# Introduction

In today’s generation, Music streaming has had an impact on all our lives, with users wanting to discover a new genre in music or wants to upgrade their playlist with some new songs from their favorite genre. Our app, Aria, will allow the user to create the perfect playlist to suit their mood. Aria will let our users create, delete, and update their playlist. The users can also add songs to playlists that they already love. They will also manage their account with all their songs, albums, and playlists.

# Literature Review

Many music applications we use today use database management to allow their users to store, manage, create, and delete songs into their music library and playlist.

## Apple’s data base applications

Apple uses many applications to manage Apple music. Apple Music uses the application “Foundation DB” for the backend development to manage the wide number of songs and created playlist in their application to satisfy their user’s needs. They also use Cloud Kit, which is their own database service that is for apple applications [1].

## Spotify’s datbase applications

Over the years, Spotify has evolved which database application they have used. The first database system that Spotify uses PostgreSQL but later uses Apache Cassandra to manage their data [2]. Spotify’s databases provide a fast and effective way for users to interact with Spotify. Cassandra allows Spotify to store copious amounts of data by allowing the developers to create wide rows with multiple columns acting as one key. Cassandra also stores “time-series” data, which is best for knowing how long a user must pay for their Spotify subscription [2].

## YouTube Music’s Databasae Applications

YouTube uses a sophisticated backend to manage its massive video storage and streaming needs. The platform’s infrastructure is built around MySQL, scaled horizontally using Vitess for handling high traffic. Videos are processed with batch jobs that handle encoding, thumbnails, and metadata, while advanced compression (VP9 & H.264) ensures efficient storage. YouTube also employs caching with Memcache and node coordination via Zookeeper. To manage the growing demands, YouTube implemented database sharding and master-slave replication and added disaster recovery measures to ensure uptime and data safety across global data centers [3].by

## Pandora Music Genome Project

The Music Genome Project (MGP) is the foundation of Pandora's personalized radio experience. It involves the analysis of songs using up to 400 musical characteristics by trained musicologists with a deep understanding of music theory. The project spans all genres and eras, from classical to contemporary music. The MGP is continually updated and helps Pandora tailor music stations based on individual listener preferences, ensuring a personalized listening experience. The project uses rigorous methods, including redundant analysis and quality control, without relying on automated processes like machine-listening [4].

Our mission for integrating these ideas for Aria in MySQL by creating individual tables for the user information, user playlist, their songs on they have added to their playlist, individual songs and their artist and what albums they are from. Aria will track user’s like songs for a user-friendly experience so they can easily access past songs that are outside of their playlist.

# Prepare Your Paper Before Styling

Before you begin to format your paper, first write and save the content as a separate text file. Complete all content and organizational editing before formatting. Please note sections A-D below for more information on proofreading, spelling and grammar.

Keep your text and graphic files separate until after the text has been formatted and styled. Do not use hard tabs, and limit use of hard returns to only one return at the end of a paragraph. Do not add any kind of pagination anywhere in the paper. Do not number text heads-the template will do that for you.

## Abbreviations and Acronyms

Define abbreviations and acronyms the first time they are used in the text, even after they have been defined in the abstract. Abbreviations such as IEEE, SI, MKS, CGS, sc, dc, and rms do not have to be defined. Do not use abbreviations in the title or heads unless they are unavoidable.

## Units

* 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.”
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* 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 must determine if your equation should be typed using 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 were defined before or immediately after. Use “(1)”, not “Eq. (1)” or “equation (1)”, except at the beginning of a sentence: “Equation (1) is . . .”

## Some Common Mistakes

* The word “data” is plural, not singular.
* The subscript for the permeability of vacuum **0, and other common scientific constants, is zero with subscript formatting, not a lowercase letter “o”.
* 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].

# Using the Template

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## Authors and Affiliations

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### For papers with more than six authors: Add author names horizontally, moving to a third row if needed for more than 8 authors.

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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.

Component heads identify the different components of your paper and are not topically subordinate to each other. Examples include Acknowledgments and References and, for these, the correct style to use is “Heading 5”. Use “figure caption” for your Figure captions, and “table head” for your table title. Run-in heads, such as “Abstract,” will require you to apply a style (in this case, italic) in addition to the style provided by the drop-down menu to differentiate the head from the text.

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.

## Figures and Tables

#### 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 |
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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.”

##### Acknowledgment *(Heading 5)*

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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2. B. Edstrom, “In praise of ‘boring’ technology,” Spotify Engineering,Feb. 25, 2013. <https://engineering.atspotify.com/2013/02/in-praise-of-boring-technology/> (accessed Apr 02, 2025).
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4. Shivang, “YouTube database – How does it store so many videos without running out of storage space?,” Scaleyourapp, Dec. 15, 2019. <https://scaleyourapp.com/youtube-database-how-does-it-store-so-many-videos-without-running-out-of-storage-space/#:~:text=YouTube%27s%20backend%20microservices%20are%20written,for%20horizontal%20scaling%20of%20MySQL>. (accessed Apr 02, 2025).
5. Pandora, “About The Music Genome Project,” Pandora internet radio. <https://www.pandora.com/corporate/mgp.shtml> (accessed Apr 02, 2025).

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