Sistem Rekomendasi dengan Metode Content-Based Filtering untuk Aplikasi Streaming Musik

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Abstract—Penelitian ini mengembangkan sebuah sistem rekomendasi untuk aplikasi streaming musik dengan menggunakan metode Content-Based Filtering, yang diimplementasikan pada dataset lagu Spotify dari Kaggle. Sistem rekomendasi ini dirancang untuk meningkatkan pengalaman pengguna dengan memberikan rekomendasi lagu yang sesuai dengan preferensi individu berdasarkan karakteristik konten musik. Dataset yang digunakan mencakup berbagai fitur lagu seperti genre, artis, popularitas, dan elemen audio lainnya yang dianalisis untuk membangun model rekomendasi. Melalui metode Content-Based Filtering, sistem ini mampu menganalisis preferensi musik pengguna dari histori pemutaran lagu mereka dan memberikan rekomendasi lagu yang memiliki kesamaan fitur. Hasil penelitian menunjukkan bahwa sistem ini efektif dalam memberikan rekomendasi yang relevan dan personal, sehingga dapat meningkatkan keterlibatan pengguna pada platform streaming musik. Implementasi dari sistem ini juga menunjukkan potensi penerapan yang luas dalam industri musik digital dengan kemampuan adaptasi terhadap preferensi pengguna yang dinamis.

Index Terms—sistem rekomendasi lagu, pendekatan hybrid, collaborative filtering, content-base filtering

I. Pendahuluan

Dalam era digitalisasi yang semakin pesat, layanan streaming musik secara online telah menjadi bagian integral dari kehidupan masyarakat sehari-hari. Kemudahan akses musik saat ini telah membawa dampak yang signifikan terhadap cara kita mendengarkan dan menikmati musik. Dengan sekali klik, pengguna dapat menikmati jutaan lagu dari berbagai genre secara cepat dan mudah.

Kemudahan ini telah mengubah paradigma mendengarkan musik yang sebelumnya terbatas pada koleksi pribadi atau stasiun radio lokal, menjadi lebih luas dan terbuka untuk mengeksplorasi segala jenis musik dari seluruh dunia. Layanan streaming musik memungkinkan pengguna untuk membuat playlist yang sesuai dengan preferensi mereka, mendengarkan lagu favorit di mana pun dan kapan pun.

Namun, dengan kemudahan ini muncul tantangan baru bagi pengguna, yaitu dilema dalam memilih lagu dari jutaan pilihan yang tersedia. Hal ini dapat menyulitkan pengguna dalam menemukan lagu yang sesuai dengan preferensi mereka. Oleh karena itu, diperlukan sistem rekomendasi yang efektif untuk membantu pengguna menentukan musik yang sesuai dengan keinginan mereka serta menampilkan musik-musik yang relevan dengan preferensi mereka.

Penelitian ini bertujuan untuk mengeksplorasi dan mengembangkan sistem rekomendasi sebagai alat untuk membantu pengguna menemukan lagu yang sesuai dengan preferensi mereka. Sistem rekomendasi yang dibangun dalam penelitian ini menggunakan metode Content-Based Filtering dan diimplementasikan pada dataset Spotify yang diperoleh dari Kaggle. Metode Content-Based Filtering adalah pendekatan yang menganalisis fitur-fitur konten musik, seperti genre, artis, popularitas, dan elemen audio lainnya, untuk memberikan rekomendasi yang relevan kepada pengguna.

II. Kajian Pustaka

A. Sistem Rekomendasi

Sistem rekomendasi telah menjadi komponen penting dalam berbagai aplikasi digital, termasuk e-commerce, media sosial, dan layanan streaming musik. Tujuan utama dari sistem rekomendasi adalah membantu pengguna menemukan konten yang relevan dan menarik berdasarkan preferensi dan perilaku mereka. Berikut ini adalah tinjauan literatur mengenai berbagai pendekatan dan tantangan dalam sistem rekomendasi, dengan fokus pada metode Content-Based Filtering dalam konteks layanan streaming musik.

B. Content-Based Filtering

Content-Based Filtering (CBF) adalah metode yang menganalisis fitur dari item yang disukai oleh pengguna untuk memberikan rekomendasi. Dalam konteks musik, fitur-fitur ini meliputi genre, artis, popularitas, dan elemen audio lainnya. Menurut Pazzani dan Billsus (2007), CBF tidak memerlukan data dari pengguna lain, yang membuatnya independen dari komunitas pengguna dan sangat personal.

III. 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 III-A–III-E 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 number text heads—LaTeX will do that for you.

A. 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, ac, dc, and rms do not have to be defined. Do not use abbreviations in the title or heads unless they are unavoidable.

B. 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".
- 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/m^2" or "webers per square meter", not "webers/m^2". 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 "cm^3", not "cc".)

C. Equations

Number equations consecutively. 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:

$$a + b = \gamma \tag{1}$$

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 . . ."

D. LaTeX-Specific Advice

Please use "soft" (e.g., `\eqref{Eq}`) cross references instead of "hard" references (e.g., `(1)`). That will make it possible to combine sections, add equations, or change the order of figures or citations without having to go through the file line by line.

Please don't use the `{eqnarray}` equation environment. Use `{align}` or `{IEEEeqnarray}` instead. The `{eqnarray}` environment leaves unsightly spaces around relation symbols.

Please note that the `{subequations}` environment in LaTeX will increment the main equation counter even when there are no equation numbers displayed. If you forget that, you might write an article in which the equation numbers skip from (17) to (20), causing the copy editors to wonder if you've discovered a new method of counting.

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LaTeX can't read your mind. If you assign the same label to a subsubsection and a table, you might find that Table I has been cross referenced as Table IV-B3.

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Do not use `\nonumber` inside the `{array}` environment. It will not stop equation numbers inside `{array}` (there won't be any anyway) and it might stop a wanted equation number in the surrounding equation.

E. Some Common Mistakes

- The word "data" is plural, not singular.
- The subscript for the permeability of vacuum μ_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].

F. Authors and Affiliations

The class file is designed for, but not limited to, six authors. A minimum of one author is required for all conference articles. Author names should be listed starting from left

to right and then moving down to the next line. This is the author sequence that will be used in future citations and by indexing services. Names should not be listed in columns nor group by affiliation. Please keep your affiliations as succinct as possible (for example, do not differentiate among departments of the same organization).

G. Identify the Headings

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.

H. Figures and Tables

a) 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.

TABLE I
TABLE TYPE STYLES

Table Head	Table Column Head		
	Table column subhead	*Subhead*	*Subhead*
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[a]Sample of a Table footnote.

Fig. 1. Example of a 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

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

Please number citations consecutively within brackets [1]. The sentence punctuation follows the bracket [2]. Refer simply to the reference number, as in [3]—do not use "Ref. [3]" or "reference [3]" except at the beginning of a sentence: "Reference [3] was the first ..."

Number footnotes separately in superscripts. Place the actual footnote at the bottom of the column in which it was cited. Do not put footnotes in the abstract or reference list. Use letters for table footnotes.

Unless there are six authors or more give all authors' names; do not use "et al.". Papers that have not been published, even if they have been submitted for publication, should be cited as "unpublished" [4]. Papers that have been accepted for publication should be cited as "in press" [5]. Capitalize only the first word in a paper title, except for proper nouns and element symbols.

For papers published in translation journals, please give the English citation first, followed by the original foreign-language citation [6].

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