Algoritma Greedy dalam Graf

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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, or Math in Paper Title or Abstract.* (*Abstract*)

Keyword: algoritma, greedy, graff

I. LATAR BELAKANG

Pada era modern yang penuh dengan kemajuan teknologi, perencanaan perjalanan menjadi salah satu aspek yang sangat penting dalam kehidupan sehari-hari. Efisiensi dalam pencarian rute, seperti menemukan jalur tercepat atau yang paling hemat waktu, memiliki dampak besar pada produktivitas, efisiensi waktu, dan penghematan biaya. Dalam konteks ini, algoritma greedy dalam graf muncul sebagai metode yang cukup sederhana namun sangat efektif.

Algoritma greedy adalah pendekatan algoritma yang memecahkan masalah secara berurutan, di mana setiap langkahnya selalu memilih opsi terbaik yang tersedia pada saat itu. Pendekatan ini didasarkan pada keyakinan bahwa dengan mengambil pilihan terbaik pada setiap langkah, kita dapat mencapai hasil optimal secara keseluruhan. Selain itu, algoritma greedy mengasumsikan bahwa hasil terbaik pada tingkat lokal merupakan kontribusi positif bagi hasil terbaik secara keseluruhan[1].

Persoalan optimasi dalam konteks algoritma greedy disusun oleh elemen-elemen sebagai berikut:

- Himpunan Kandidat, Ini adalah himpunan elemen yang dapat membentuk solusi. Pada setiap langkah, satu kandidat diambil dari himpunan ini.

- Himpunan Solusi, Ini adalah himpunan kandidat yang terpilih sebagai solusi untuk masalah. Solusi Set adalah bagian dari himpunan kandidat.

- Fungsi Seleksi, adalah fungsi yang digunakan untuk memilih kandidat yang paling mungkin akan memberikan solusi optimal pada setiap langkah. Kandidat yang sudah terpilih pada suatu langkah tidak akan dipertimbangkan lagi pada langkah berikutnya.

- Fungsi Kelayakan, adalah fungsi yang memeriksa apakah kandidat yang sudah terpilih dapat memberikan solusi yang layak, yaitu tidak melanggar kendala yang ada.

- Fungsi Obyektif, adalah fungsi yang digunakan untuk memaksimalkan atau meminimalkan nilai solusi. Tujuannya adalah memilih satu saja solusi dari masing-masing anggota

Mencari jalur terpendek dalam sebuah graf adalah salah satu masalah yang umum dalam bidang optimasi. Ketika kita berbicara tentang mencari jalur terpendek, biasanya kita beroperasi dalam konteks graf berbobot, di mana setiap sisi memiliki nilai numerik atau bobot yang mencerminkan berbagai parameter seperti jarak antara lokasi, waktu yang dibutuhkan untuk pengiriman pesan, biaya pembangunan, dan sebagainya. Pada dasarnya, kita mengasumsikan bahwa semua bobot adalah bilangan positif. Jalur terpendek adalah rute dari satu titik ke titik lain yang memiliki total bobot

terkecil dari titik awal ke titik akhir. Jalur terpendek ini merepresentasikan perjalanan minimum yang diperlukan untuk mencapai suatu tempat dari tempat lain[3]. Algoritma Greedy melakukan pencarian jalur dengan menghubungkan titik-titik terpendek yang ditemui secara berurutan, kemudian melanjutkan ke titik terpendek yang belum dilewati oleh jalur lain. Proses ini berlangsung hingga semua titik terhubung, mencari estimasi jalur terdekat[2].

Adapun kelebihan dari algoritma greedy ini adalah praktis, simple, dan fleksibel. Proses pencarian rute menggunakan algoritma greedy lebih cepat karena tidak melalui banyak tahapan proses untuk mendapatkan rute terpendek. Dalam artikel ini, kita akan menjelaskan dasar-dasar penggunaan algoritma greedy dalam konteks pencarian rute. Artikel ini mencakup implementasi, keunggulan, serta batasan terkait dengan algoritma ini. Dengan pemahaman yang mendalam tentang bagaimana algoritma greedy beroperasi dalam konteks pencarian rute, masyarakat akan memiliki kemampuan untuk meningkatkan efisiensi dan kualitas perjalanan mereka dalam berbagai situasi sehari-hari.

II. EASE OF USE

A. Selecting a Template (Heading 2)

First, confirm that you have the correct template for your paper size. This template has been tailored for output on the A4 paper size. If you are using US letter-sized paper, please close this file and download the file "MSW_USltr_format".

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The template is used to format your paper and style the text. All margins, column widths, line spaces, and text fonts are prescribed; please do not alter them. You may note peculiarities. For example, the head margin in this template measures proportionately more than is customary. This measurement and others are deliberate, using specifications that anticipate your paper as one part of the entire proceedings, and not as an independent document. Please do not revise any of the current designations.

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Before you begin to format your paper, first write and save the content as a separate text file. 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.

Finally, complete content and organizational editing before formatting. Please take note of the following items when proofreading spelling and grammar:

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, sc, 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/m2" or "webers per square meter," not

"webers/m2." Spell 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*)

C. 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

$$a + b = \gamma \qquad (1)$$

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 ..."

D. 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, semi-/colons, 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." $\alpha + \beta = \chi$ (1)

- 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].

IV. USING THE TEMPLATE

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

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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.

A. Authors and Affiliations

The template is designed so that author affiliations are not repeated each time for multiple authors of the same affiliation. Please keep your affiliations as succinct as possible (for example, do not differentiate among departments of the same organization). This template was designed for two affiliations.

1) For author/s of only one affiliation (Heading 3): To change the default, adjust the template as follows.

a) Selection (Heading 4): Highlight all author and affiliation lines.

b) Change number of columns: Select the Columns icon from the MS Word Standard toolbar and then select "1 Column" from the selection palette.

c) Deletion: Delete the author and affiliation lines for the second affiliation.

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a) Selection: Highlight all author and affiliation lines.

b) Change number of columns: Select the "Columns" icon from the MS Word Standard toolbar and then select "1 Column" from the selection palette.

c) Highlight author and affiliation lines of affiliation 1 and copy this selection.

d) Formatting: Insert one hard return immediately after the last character of the last affiliation line. Then paste down the copy of affiliation 1. Repeat as necessary for each additional affiliation.

e) Reassign number of columns: Place your cursor to the right of the last character of the last affiliation line of an even numbered affiliation (e.g., if there are five affiliations, place your cursor at end of fourth affiliation). Drag the cursor up to highlight all of the above author and affiliation lines. Go to Column icon and select "2 Columns". If you have an odd number of affiliations, the final affiliation will be centered on the page; all previous will be in two columns.

B. 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. Styles named "Heading 1," "Heading 2," "Heading 3," and "Heading 4" are prescribed.

C. Figures and Tables

1) 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 STYLES

Table	Table Column Head

Head	Table column subhead	Subhead	Subhead
copy	More table copy[a]		

a. Sample of a Table footnote. *(Table footnote)*

b.

Fig. 1.   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."

VIDEO LINK AT YOUTUBE *(Heading 5)*

Include link of your video on YouTube in this section.

ACKNOWLEDGMENT *(Heading 5)*

We suggest that you use a text box to insert a graphic (which is ideally a 300 dpi resolution TIFF or EPS file with all fonts embedded) because this method is somewhat more stable than directly inserting a picture.

To have non-visible rules on your frame, use the MSWord "Format" pull-down menu, select Text Box > Colors and Lines to choose No Fill and No Line.

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

PERNYATAAN

The template will 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 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].

[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.

[3]   I.S. Jacobs and C.P. Bean, "Fine particles, thin films and exchange anisotropy," in Magnetism, vol. III, G.T. Rado and H. Suhl, Eds. New York: Academic, 1963, pp. 271-350.

[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

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Laguboti, 20 Desember 2021

Ttd

Nama dan NIM

Referensi

[1]   Y. Darnita and R. Toyib, "Penerapan Algoritma Greedy Dalam Pencarian Jalur Terpendek Pada Instansi-Instasi Penting Di Kota Argamakmur Kabupaten Bengkulu Utara," vol. 15, no. 2, 2019.

[2]   R. Febrian Ginting, A. Situmorang, S. Manurung, and H. Artikel, "Sistem Informasi Gografis Pencarian Lokasi Sekolah Terdekat Pada Kota Medan Dengan Algoritma Greedy Berbasis Web," *Methotika J. Ilm. Tek. Inform.*, vol. 2, no. 2, pp. 85–91, 2022, [Online]. Available: http://ojs.fikom-methodist.net/index.php/methotika

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