Software Requirements Specification for Citation Graph

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Section 1: Introduction

System to be Produced

The product to be produced is a web-based tool with which a user can input research papers, view graphs of the citations, and add necessary info.

Definitions, Acronyms, and Abbreviations

- Attribute - A piece of metadata about a research paper.
- BibTeX - A bibliography system/format meant to be used as an extension to LaTeX
- Doxygen - A tool for generating software reference documentation
- LaTeX - A typesetting system/format for writing papers and documentation

Section 2: Product Overview

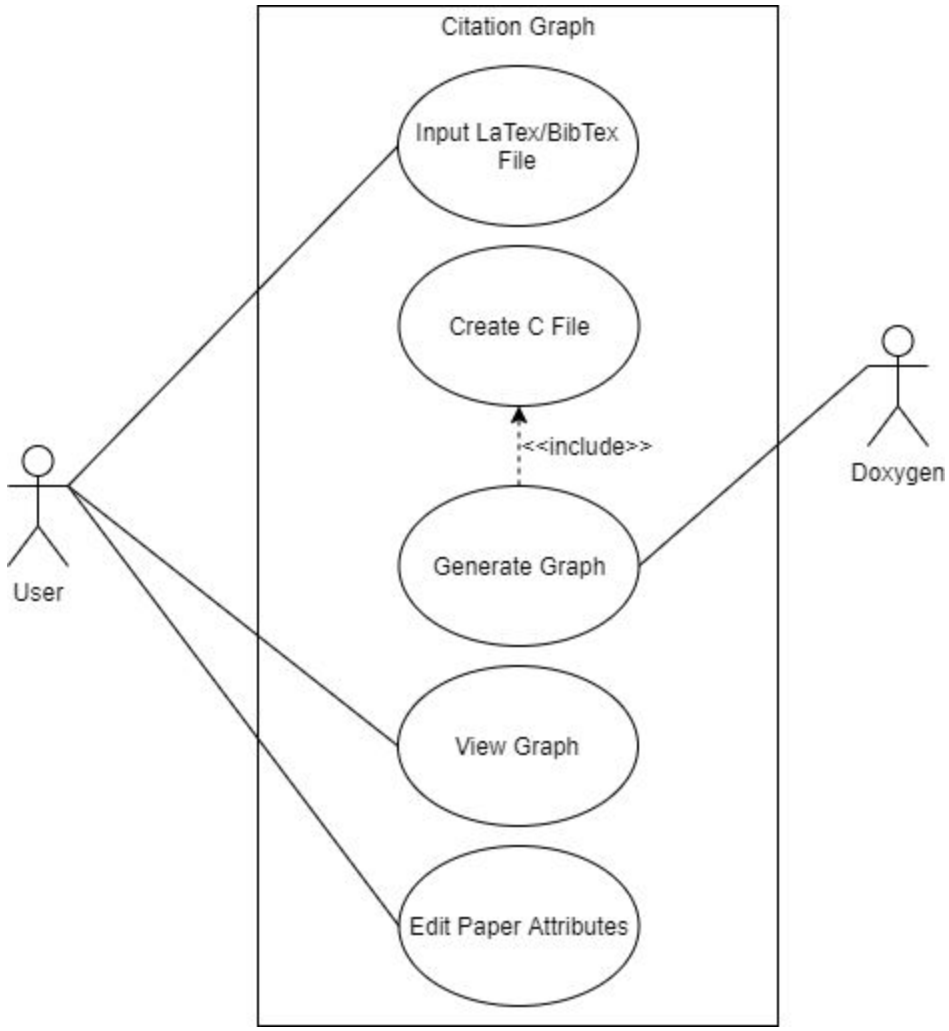
Assumptions

Assume all the necessary software and dependencies are available (either for installation by the user or to be packaged with the final product). The user will have the LaTeX form of their paper available and is able to input extra relevant information about the paper as needed.

Stakeholders

- Customer: Jianhua Liu
    - The customer's interest is to help bolster research efforts by filling in gaps left by other products that provide a similar service to ours.
- Product Owner: David Jefts

Use Case Diagram



Use Case Descriptions

- Use Case 1, Input LaTex/BibTex File: The User provides their research paper(s) in a .tex/.bib format. The LaTex file can be the full paper or a "reduced" paper (only includes paper attributes that the System will be using). The System saves these in it's folder structure.
- Use Case 2, Create C File: The files provided by the User are not in a format usable by Doxygen to generate the graph, so the System converts them to a C file. The C file does not have to be code that compiles/runs/functions, it just has to be interpretable by Doxygen and generate the desired graph. This Use Case is included in the generation of the graph.
- Use Case 3, Generate Graph: Doxygen generates a citation graph using the C file created in Use Case 2.

- Use Case 4, View Graph: The citation graph is viewable in a web browser. In the beginning stages of development, the HTML will be generated by Doxygen. In the later stages of development, the developers will write their own front end for customizability.
- Use Case 5, Edit Paper Attributes: The User modifies paper attributes (see Section 1 definitions). In the beginning stages of development, the user will edit their files in any text editor and the system will regenerate. In the later stages of development, there will be a forms page in the web browser allowing the user to modify and add fields.

Section 3: Specific Requirements

3.1 Functional Requirements

No.	FR1
Statement	The user shall be able to input a research paper in the LaTeX typesetting format. It may also use BibTeX for bibliographies, citations, and references.
Source	The customer.
Dependency	IR1.
Conflicts	None.
Supporting Material	None.
Evaluation Method	The inputted file is stored by the system.
Revision History	Created version 1.0.

No.	FR2
Statement	The user shall be notified if their research paper failed to be input.
Source	The development team.
Dependency	FR1, IR1.
Conflicts	None.

Supporting Material	None.
Evaluation Method	A paper in an invalid format (e.g. docx, pdf, etc.) will be input and the program will inform/notify the user of its failure to analyze the document.
Revision History	Created version 1.0.

No.	**FR3**
Statement	The software shall display a graph which represents how one paper interacts with or references other papers.
Source	The customer.
Dependency	None.
Conflicts	None.
Supporting Material	None.
Evaluation Method	Multiple papers are inputted and a graph is shown with nodes representing papers and connections representing references.
Revision History	Created version 1.0.

No.	**FR4**
Statement	A paper's attribute shall consist of an identifier and a value (i.e. author, "Corrina").
Source	The development team.
Dependency	None.
Conflicts	None.
Supporting Material	None.
Evaluation Method	An attribute with identifier and value is associated with an inputted paper.

Revision History	Created version 1.0.

No.	FR5
Statement	The software shall display a paper's attributes, such as its author(s), publication date, title, source, etc (to be added later).
Source	The customer.
Dependency	FR.
Conflicts	None.
Supporting Material	None.
Evaluation Method	The webpage will show the paper's attributes either on the graph node, a sidebar, or both.
Revision History	Created version 1.0.

No.	FR6
Statement	The user shall be able to add additional attributes to an existing paper or papers.
Source	The customer.
Dependency	FR.
Conflicts	None.
Supporting Material	None.
Evaluation Method	Affirm that an attribute created after the paper was initially provided the program is present upon its input by the user. Also, ensure that this new attribute is persistent upon reloading the program or refreshing the web page.
Revision History	Created version 1.0.

3.2 Interface Requirements

No.	IR1
Statement	The program shall accept files in LaTeX format with a '.tex' file extension.
Source	Development team.
Dependency	FR1, FR2.
Conflicts	None.
Supporting Material	None.
Evaluation Method	A file with an extension other than .tex or .bib inputted will cause a notification of failure.
Revision History	Created: v1.0.

No.	IR2
Statement	The program shall accept files in BibTex format with a '.bib' file extension.
Source	Development team.
Dependency	FR1, FR2.
Conflicts	None.
Supporting Material	None.
Evaluation Method	A file with an extension other than .tex or .bib inputted will cause a notification of failure.
Revision History	Created: v1.0.

No.	IR3
Statement	The citation graph shall update when attributes are changed or modified.

Source	The development team.
Dependency	None.
Conflicts	None.
Supporting Material	None.
Evaluation Method	The new paper name shows on the webpage after update.
Revision History	Created version 1.0.

No.	**IR4**
Statement	The outputted citation graph shall regenerate upon update to the reference connections.
Source	The development team.
Dependency	None.
Conflicts	None.
Supporting Material	None.
Evaluation Method	The new graph connection shows on the webpage after update.
Revision History	Created version 1.0.

No.	**IR5**
Statement	The paper attribute list shall update upon modification.
Source	The development team.
Dependency	None.
Conflicts	None.
Supporting Material	None.

Evaluation Method	The new attribute(s) show on the webpage after update.
Revision History	Created version 1.0.

No.	IR6
Statement	Paper attributes shall be primarily ASCII characters in the UTF-8 encoding format. Any special unicode characters shall either be rejected by the program or not be expected to convert or display properly.
Source	Development team.
Dependency	None.
Conflicts	None.
Supporting Material	None.
Evaluation Method	An attempt to add an attribute with a special symbol fails, resulting in some kind of notification to the user.
Revision History	Created version 1.0.

3.3 Physical Environment Requirements

No.	PER1
Statement	The software shall be accessible through a web browser.
Source	The development team.
Dependency	None.
Conflicts	None.
Supporting Material	None.
Evaluation Method	Manual check.
Revision History	Created version 1.0.

No.	PER2
Statement	The software shall not depend on which operating system is used.
Source	The development team.
Dependency	None.
Conflicts	None.
Supporting Material	None.
Evaluation Method	Manual check.
Revision History	Created version 1.0.

3.4 User and Human Factors Requirements

No.	UHR1
Statement	The system shall sanitize all user inputs.
Source	The development team.
Dependency	None.
Conflicts	None.
Supporting Material	None.
Evaluation Method	Attempt bad inputs.
Revision History	Created version 1.0.

3.5 Documentation Requirements

No.	DoR
Statement	The public shall be able to access the System Requirements Specification on the Citation Graph GitHub wiki.

Source	The development team.
Dependency	None.
Conflicts	None.
Supporting Material	None.
Evaluation Method	Manually check.
Revision History	Created version 1.0.

No.	DoR1
Statement	The public shall be able to access the System Design Document on the Citation Graph GitHub wiki.
Source	The development team.
Dependency	None.
Conflicts	None.
Supporting Material	None.
Evaluation Method	Manually check.
Revision History	Created version 1.0.

No.	DoR2
Statement	The public shall be able to access the Test Plan on the Citation Graph GitHub wiki.
Source	The development team.
Dependency	None.
Conflicts	None.
Supporting Material	None.
Evaluation Method	Manually check.

Revision History	Created version 1.0.

No.	DoR3
Statement	Versions of the system shall be documented through GitHub.
Source	The development team.
Dependency	None.
Conflicts	None.
Supporting Material	None.
Evaluation Method	Manually check.
Revision History	Created version 1.0.

3.6 Data Requirements

No.	DR1
Statement	The system shall maintain an all.bib header file.
Source	The customer.
Dependency	None.
Conflicts	None.
Supporting Material	None.
Evaluation Method	Manually check.
Revision History	Created version 1.0.

No.	DR2
Statement	The system shall store the inputted LaTex papers in a folder called "Paper".

Source	The customer.
Dependency	None.
Conflicts	None.
Supporting Material	None.
Evaluation Method	Manually check.
Revision History	Created version 1.0.

No.	**DR3**
Statement	The system shall store the reduced LaTex papers in a folder called "Graph".
Source	The customer.
Dependency	None.
Conflicts	None.
Supporting Material	None.
Evaluation Method	Manually check.
Revision History	Created version 1.0.

No.	**DR4**
Statement	The system shall create a C file from the LaTex files for Doxygen to interpret.
Source	The customer.
Dependency	None.
Conflicts	None.
Supporting Material	None.

Evaluation Method	Doxygen is successfully run on the C file to generate the graphs.
Revision History	Created version 1.0.

3.7 Resource Requirements

No.	RR1
Statement	The software shall rely on Doxygen as a resource.
Source	The customer.
Dependency	None.
Conflicts	None.
Supporting Material	None.
Evaluation Method	None.
Revision History	Created version 1.0.

3.8 Security Requirements

To be determined in SRS Version 2.0

3.9 Quality Assurance Requirements

To be determined in SRS Version 2.0

Section 4: Supporting Material

To be determined in SRS Version 2.0