INVENTING CURRICULUM WITH JULIA AND POINTER-GENERATOR NETWORK

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Contents

- Curriculum: An Introduction
- Text Summarization
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Curriculum

- A course of study that will enable the learner to acquire specific knowledge and skills
- A curriculum is the combination of instructional practices, learning experiences, and students' performance assessment that are designed to bring out and evaluate the target learning outcomes of a particular course
- Curriculum is what the school is attempting to teach, which might include social behaviors as well as content and thinking skills
- A selection of information, segregated into disciplines and courses, typically designed to achieve a specific educational objective
- The curriculum is the program of instruction. It should be based on both standards and best practice research. It should be the framework that teachers use to plan instruction for their students
- Curriculum can be both written and unwritten

Source: http://www1.udel.edu/educ/whitson/897s05/files/definitions_of_curriculum.htm

C. Structure of Undergraduate Engineering program :

S. No.		Credit Breakup for CSE students
1	Humanities and Social Sciences including Management courses	12
2	Basic Science courses	24
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc	29
4	Professional core courses	49
5	Professional Elective courses relevant to chosen specialization/branch	18
6	Open subjects – Electives from other technical and /or emerging subjects	12
7	Project work, seminar and internship in industry or elsewhere	15
8	Mandatory Courses [Environmental Sciences, Induction Program, Indian Constitution, Essence of Indian Traditional Knowledge]	(non-credit)
	Total	159*

**Minor variation is allowed as per need of the respective disciplines.*

Source: https://www.aicte-india.org/sites/default/files/Vol.%201_UG.pdf Page 326

Course Code	:	COPC210
Course Title	:	Web Technologies
Number of Credits	:	2 (L: 2, T: 0, P: 0)
Prerequisites	:	-
Course Category	:	PC

Course Learning Objectives:

To provide basic skills on tools, languages and technologies related to website development. Learnings from this course may be used in the Mini Project and summer internship.

Course Content:

UNIT 1: Introduction to www

Protocols and programs, secure connections, application and development tools, the web browser,

What is server, setting up UNIX and LINUX web servers, Logging users, dynamic IP Web Design: Web site design principles, planning the site and navigation

UNIT 2: Web Systems Architecture

Architecture of Web based systems- client/server (2-tier) architecture, 3-Tier architecture, Building blocks of fast and scalable data access Concepts - Caches-Proxies- Indexes-Load Balancers- Queues, Web Application architecture (WAA)

UNIT 3: Javascript

Client side scripting, What is Javascript, simple Javascript, variables, functions,conditions, loops and repetition

UNIT 4: Advance scripting

Javascript and objects, Javascript own objects, DOM and web browser environments, forms and validations

DHTML: Combining HTML, CSS and Javascript, eventsand buttons, controlling your browser,

Ajax: Introduction advantages & disadvantages,ajax based web application, alternatives of ajax

XML, XSL and XSLT: Introduction to XML, uses of XML, simple XML,XML keycomponents, DTD and Schemas, XML with application, XSL and XSLT.

Introduction to Web Services

UNIT 5: PHP

server side scripting, Arrays, function andforms,advance PHP Databases :Basic command with PHP examples, Connection to server,creating database, selecting a database, listing database, listing tablenames creating a table, inserting data,altering tables, queries, deletingdatabase, deleting data and tables, PHP myadmin and database bugs.

Source: https://www.aicte-india.org/sites/default/files/DiplomaET.pdf Pages: 341-342

https://www.indeed.co.in/jobs?q=web developer fresher&l&advn=1706594845202287&vjk=5c04f82d80926693

Sort by: **relevance** - date

Page 1 of 934 jobs

Front End Developer

talentbag

Mumbai, Maharashtra • Temporarily remote

Apply securely with Indeed Resume

Responsive employer

- Designing & developing UI for web & mobile applications.
- The ideal candidate will be responsible for designing, developing, testing, and debugging responsive...

30+ days ago · Save job

Jr. .NET Developer

NetXs Solutions

Ahmedabad, Gujarat • Temporarily remote

₹10,000 - ₹20,000 a month

Apply securely with Indeed Resume

- We at NetXs Solutions,Ahmedabad have URGENT job opening for "Jr.
- .NET Developer" and looking for a person having knowledge &

Front End Developer

talentbag - Mumbai, Maharashtra

Full-time, Fresher - Temporarily remote

Responded to 75% or more applications in the past 30 days, typically within 2 days.

Apply Now

The ideal candidate will be responsible for designing, developing, testing, and debugging responsive web and mobile applications for the company. Using HTML and CSS, this candidate will be able to translate user and business needs into functional frontend design.

Responsibilities

- Designing & developing UI for web & mobile applications
- Build reusable code and libraries for future use
- Ability to convert comprehensive layout and wireframes into working HTML pages.
- Accurately translate user and business needs into functional frontend code

Qualifications

- Familiarity using Scrum/Agile development methodologies
- Fresher or less than 2 years of experience in frontend development
- Good understanding of front-end technologies including HTML, CSS(flex), JavaScript, jQuery & Bootstrap framework

https://www.indeed.co.in/jobs?q=web developer fresher&l&vjk=3d62ff1e0a861950

6 days ago · Save job · More...

new

Web Developer

Radi8 Labs

Kochi, Kerala • Remote

Apply securely with Indeed Resume

- 2 years of experience building web applications.
- Web development: 2 years (Preferred).
- Building rich, interactive web applications in a greenfield environment.

Just posted · Save job · More...

new

Full Stack Web Developer

Joys Bakehouse

Remote

₹20,000 - ₹25,000 a month

Apply securely with Indeed Resume

- We are hiring web developers for a new project that we are undertaking.
- It's a remote (work from home) job opportunity in which you must be willing to work...

4 days ago · Save job · More...

new

PHP Web Developer

Web Developer

Radi8 Labs - Kochi, Kerala

Full-time, Contract, Fresher - Remote

Apply Now

What you'll be doing:

- Building rich, interactive web applications in a greenfield environment
- Building API's and developing micro-services
- Designing new features
- CI/CD

What you'll need:

- 2 years of experience building web applications
- Programming in Python, PHP, Go, Java or other functional programming languages
- Knowledge of HTML, CSS, Javascript, Bootstrap & Material UI
- Strong computer science fundamentals and a love for design
- Quick learner & Result driven
- Good communication and a love for travel and problem solving

Nice to have:

- Github account with some cool projects
- React, Angular, Vue or Webpack
- Experience on consumer facing applications
- Agile, DevOps methodology

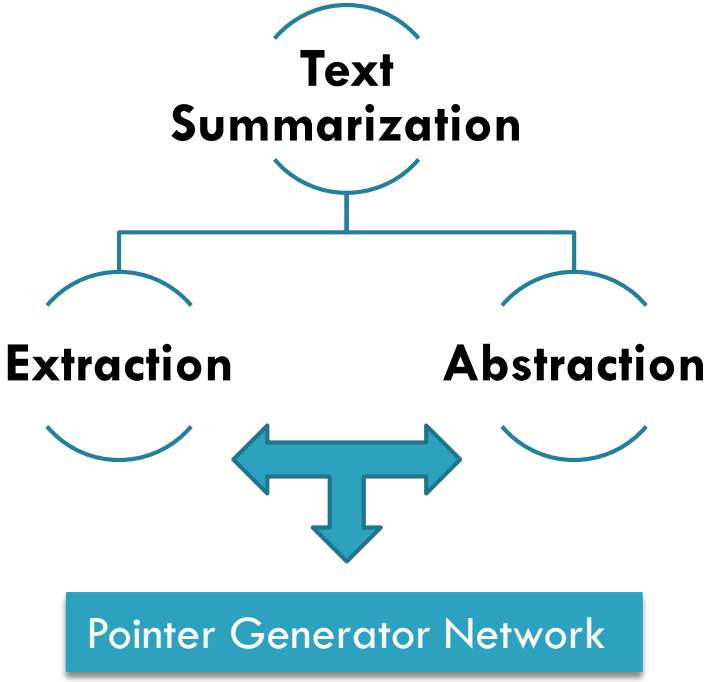
Job Types: Full-time, Contract, Fresher

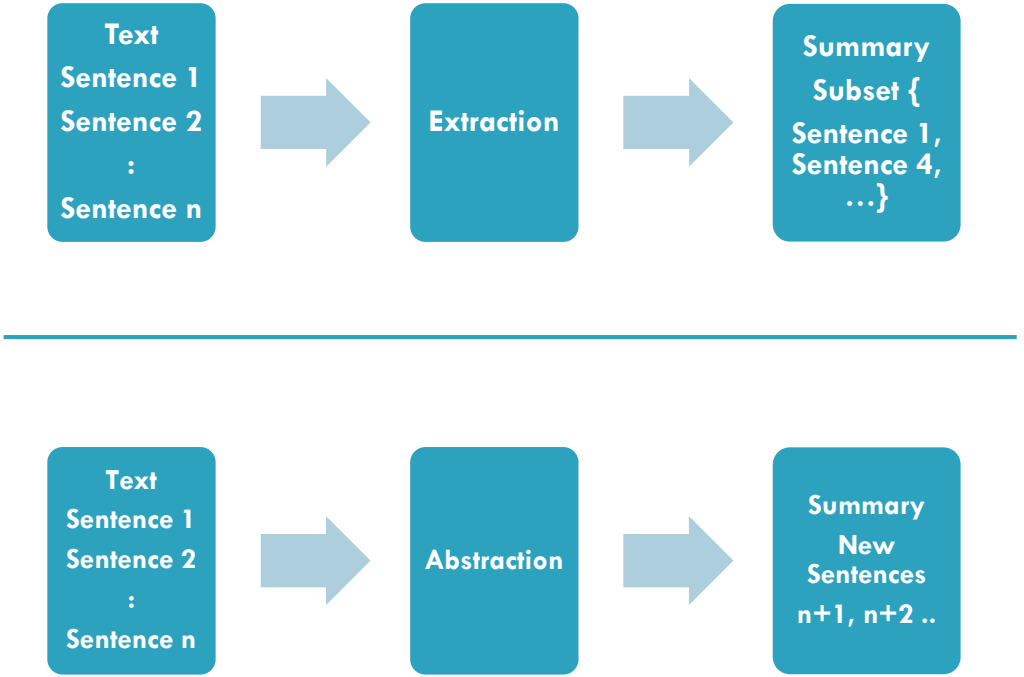
Experience:

- web development: 2 years (Preferred)

Text Summarization

Shortening long pieces of text by applying computational methods





1. Create a dataset of job postings
2. Remove unwanted stop words, numbers, punctuation marks, unrelated words
3. Tokenize words and sentences.
4. Compute word frequency [n-gram analysis] and sentence score.
5. Select sentences with high scores and concatenate them
6. Sort the words in descending order of frequency (highest first)
7. Extract the top-n words/ word combinations from the previous step and compare them with the Syllabus of particular subject
8. Refine the syllabus of existing subject with new keywords.
   Propose a new subject

TextSummarizer.jl

```
import Pkg;
Pkg.clone("/home/gajendra/julia-1.0.5-linux-x86_64/julia-1.0.5/TextSummarizer.jl-master")
Pkg.activate("/home/gajendra/julia-1.0.5-linux-x86_64/julia-1.0.5/TextSummarizer.jl-master")
```

GitHub: https://github.com/Jcharis/TextSummarizer.jl

Tutorial: https://www.youtube.com/watch?v=PwkpAXXQmrA

```
julia> using TextSummarizer

julia> docx="The ideal candidate will be responsible for designing, developing, testing, and debugging responsive web and mobile applications for the company. Using HTML and CSS, this candidate will be a
ble to translate user and business needs into functional frontend design.

       Responsibilities

           Designing & developing UI for web & mobile applications
           Build reusable code and libraries for future use
           Ability to convert comprehensive layout and wireframes into working HTML pages.
           Accurately translate user and business needs into functional frontend code

       Qualifications

           Familiarity using Scrum/Agile development methodologies
           Fresher or less than 2 years of experience in frontend development
           Good understanding of front-end technologies including HTML, CSS(flex), JavaScript, jQuery & Bootstrap framework

       Required Web Developer and Designer Candidates must have good knowledge of wordpress,HTML,PHP Skills:- Wordpress and HTML .Experience :- Fresher to 1 year

       Web Developer We are hiring full time web developer and looking for bright candidate to join team Random Soft Solution
       Skills: Html, CSS, Bootstrap, PHP, Jquery, WordPress, CI.
       Qualification: Graduation.
       Expreince: Fresher 2 Year.
       Salary: 1.8 to 2.6 lac INR/Annual
       Skills:Html, CSS, Bootstrap, PHP, Jquery, WordPress, CI. Qualification:Graduation. Expreince:Fresher 2 Year. Salary: 1.8 to 2.6 lac INR/Annual"
"The ideal candidate will be responsible for designing, developing, testing, and debugging responsive web and mobile applications for the company. Using HTML and CSS, this candidate will be able to trans
late user and business needs into functional frontend design.\n\nResponsibilities\n\n    Designing & developing UI for web & mobile applications\n    Build reusable code and libraries for future use\n
 Ability to convert comprehensive layout and wireframes into working HTML pages.\n    Accurately translate user and business needs into functional frontend code\n\nQualifications\n\n    Familiarity using
 Scrum/Agile development methodologies\n    Fresher or less than 2 years of experience in frontend development\n    Good understanding of front-end technologies including HTML, CSS(flex), JavaScript, jQu
ery & Bootstrap framework\n\nRequired Web Developer and Designer Candidates must have good knowledge of wordpress,HTML,PHP Skills:- Wordpress and HTML .Experience :- Fresher to 1 year\n\nWeb Developer We
 are hiring full time web developer and looking for bright candidate to join team Random Soft Solution\nSkills: Html, CSS, Bootstrap, PHP, Jquery, WordPress, CI.\nQualification: Graduation.\nExpreince: F
resher 2 Year.\nSalary: 1.8 to 2.6 lac INR/Annual\nSkills:Html, CSS, Bootstrap, PHP, Jquery, WordPress, CI. Qualification:Graduation. Expreince:Fresher 2 Year. Salary: 1.8 to 2.6 lac INR/Annual"

julia> TextSummarizer.text_summarizer(docx)
"Skills:Html, CSS, Bootstrap, PHP, Jquery, WordPress, CI.  Skills: Html, CSS, Bootstrap, PHP, Jquery, WordPress, CI.  The ideal candidate will be responsible for designing, developing, testing, and debug
ging responsive web and mobile applications for the company.  Required Web Developer and Designer Candidates must have good knowledge of wordpress,HTML,PHP Skills:- Wordpress and HTML .Experience :- Fres
her to 1 year      Good understanding of front-end technologies including HTML, CSS(flex), JavaScript, jQuery & Bootstrap framework  Using HTML and CSS, this candidate will be able to translate user and
business needs into functional frontend design.  Salary: 1.8 to 2.6 lac INR/Annual  Web Developer We are hiring full time web developer and looking for bright candidate to join team Random Soft Solution
     Designing & developing UI for web & mobile applications      Accurately translate user and business needs into functional frontend code  Expreince:Fresher 2 Year.  Expreince: Fresher 2 Year.  Qualif
ication:Graduation.  Qualification: Graduation.      Fresher or less than 2 years of experience in frontend development      Build reusable code and libraries for future use      Ability to convert compr
ehensive layout and wireframes into working HTML pages.      Familiarity using Scrum/Agile development methodologies"
```

TextAnalysis.jl

```
import Pkg;
Pkg.add("TextAnalysis")
Pkg.add("WordTokenizers")
using TextAnalysis
using WordTokenizers
```

Tutorial:

https://juliatext.github.io/TextAnalysis.jl/documents.html

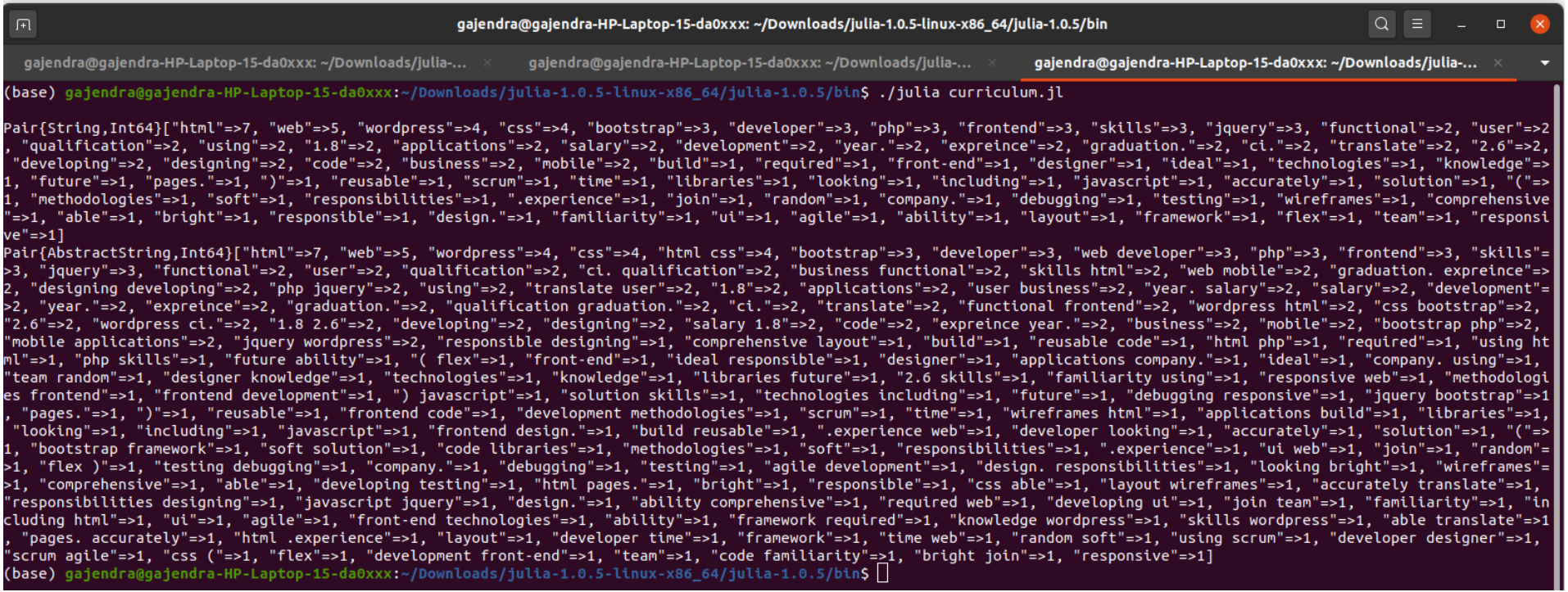
https://jcharistech.wordpress.com/2018/05/01/natural-language-processing-in-julia-text-analysis/

https://www.youtube.com/watch?v=4nMP24xhuWg

```julia
using TextAnalysis
using WordTokenizers
using Languages

filepath = "dataset.txt"

fd = FileDocument(filepath)
tokens_list = lowercase.(tokens(fd))

stopwords_list = stopwords(Languages.English())
articles_list = articles(Languages.English())
prepositions_list = prepositions(Languages.English())
pronouns_list = pronouns(Languages.English())
punctuation_list = [",", ";", "?", "\"", "\'", "!", ".", "-", "/", "&", ":"]
number_list = ["0", "1", "2", "3", "4", "5", "6", "7", "8", "9"]
words_list = [
    "fresher",
    "candidate",
    "inr",
    "graduation",
    "qualificiation",
    "experience",
    "annual",
    "lac",
    "hiring",
    "understanding",
    "convert",
    "candidates",
    "qualifications",
]
```

```
for word in words_list
    filter!(x -> x ≠ word, tokens_list)
end

for num in number_list
    filter!(x -> x ≠ num, tokens_list)
end

for punctuationmark in punctuation_list
    filter!(x -> x ≠ punctuationmark, tokens_list)
end

for stopword in stopwords_list
    filter!(x -> x ≠ stopword, tokens_list)
end

for article in articles_list
    filter!(x -> x ≠ article, tokens_list)
end

for preposition in prepositions_list
    filter!(x -> x ≠ preposition, tokens_list)
end

for pronoun in pronouns_list
    filter!(x -> x ≠ pronoun, tokens_list)
end

language(fd)
```

```
td = TokenDocument(tokens_list)

ngd1 = ngrams(td)
ngd2 = ngrams(td, 2)
ngd3 = ngrams(td, 3)

gram = ngd1
bigram = ngd2
trigram = ngd3

gramd = NGramDocument(gram)
bigramd = NGramDocument(bigram)
trigramd = NGramDocument(trigram)

println()

sortedDict = sort(collect(gram), by = x -> x[2], rev = true)
println(sortedDict)

sortedDict2 = sort(collect(bigram), by = x -> x[2], rev = true)
println(sortedDict2)

```



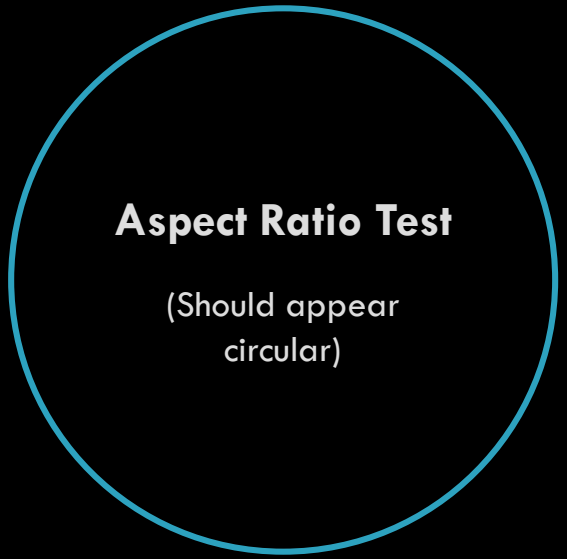
GitHub URL: https://github.com/gcdeshpande/Inventing-Curriculum-using-Julia

Conclusion

- To achieve better results using natural language processing one of the important factor is preprocessing of document
- Using pointer generator network we can balance the advantages / disadvantages of extractive / abstractive summarization to get the better results
- Need to experiment with non professional courses and with other than English language such as indic languages

Thank You!

Widescreen Test Pattern (16:9)



4x3

16x9