AdvR\_LPA\_Final\_Project

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# **LinkedIn Profile Analyzer**

## Motivation and Overview

The LinkedIn Profile Analyzer project aims to address the critical need for data-driven insights into optimizing LinkedIn profiles for networking success. In today’s digital age, professional networking plays a pivotal role in career growth, and understanding the relevance of one’s profile to specific topics or articles can significantly enhance networking effectiveness.

## Related Work

The project draws inspiration from a diverse range of resources, namely articles like “<https://everyonesocial.com/blog/linkedin-profile-optimization/>” by everyone social, “<https://fastercapital.com/topics/optimizing-your-linkedin-profile-for-networking-success.html>” by faster capital. where these articles mainly talk about the critical need for optimizing the linkedin profiles for network success in modern world.

## Initial Questions

At the project’s inception, the core question revolved around extracting pertinent information from LinkedIn profiles and evaluating their alignment with the articles. Over time, the inquiry evolved to encompass the efficacy of keyword matching in relevance scoring and the potential impact of profile optimization on networking outcomes.

## Data

The project utilizes LinkedIn profile data obtained through web scraping techniques facilitated by the “rvest” package in R. The data import and pre processing stages involved meticulous handling of HTML content, text extraction.Furthermore, a designated article URL served as a benchmark for relevance scoring.

## Exploratory Data Analysis

With a new project the first thing to do is understand the basic data that will be used. LinkedIn has data on companies, educational institutions, action verbs, contact information, documents, and many more things not investigated. The goal of this EDA was to determine how the data was stored, what it looks like from person to person and what the population trends look like. The goal was to understand where to find the data and how to handle if/when data is missing. The goal of this application is to optimize a user’s LinkedIn profile and the best way to improve a profile is when there are unfilled sections (missing data) and to make all data unique (remove duplicates). The data is pretty basic information, but a lot is gained from EDA.

## Narrative and Summary

The culmination of data analysis revealed valuable insights regarding profile relevance assessment and optimization strategies. The tool’s ability to generate actionable suggestions for profile enhancement underscores its practical utility in facilitating networking success. Nonetheless, it is imperative to acknowledge the limitations inherent in keyword-based evaluations and the necessity for continuous refinement through user feedback and validation processes.

## *Project R Code*

### LINKEDIN PROFILE ANALYZER  
  
library(shiny)  
library(shinythemes)  
library(shinydashboard)

##   
## Attaching package: 'shinydashboard'

## The following object is masked from 'package:graphics':  
##   
## box

library(plotly)

## Loading required package: ggplot2

##   
## Attaching package: 'plotly'

## The following object is masked from 'package:ggplot2':  
##   
## last\_plot

## The following object is masked from 'package:stats':  
##   
## filter

## The following object is masked from 'package:graphics':  
##   
## layout

library(rvest)  
library(pdftools)

## Using poppler version 23.04.0

library(stringr)  
  
# Define UI   
ui <- fluidPage(  
 tags$head(  
 tags$style(HTML("  
 body {  
 background: linear-gradient(to right, #EA8D8D,#A890FE);  
 color: #f7f7f7;  
 font-family: 'Arial', sans-serif;  
 border-radius: 15px;  
 }  
 .container-fluid {  
 padding: 10px;  
 height: 100px;  
 box-shadow: 0 16px 32px 0 rgba(0,0,0,0.2);  
 border-radius: 30px;  
 margin:5px;  
 }  
 .well {  
 background-color: rgba(255, 255, 255, 0.9);  
 border-radius: 15px;  
 border: none;  
 box-shadow: 0 8px 16px 0 rgba(0,0,0,0.2);  
  
 }  
 .btn-primary {  
 background-color: #4CAF50;  
 border-color: #3e8e41;  
 }  
 .btn-primary:hover {  
 background-color: #45a049;  
 }  
 # .nav-tabs {  
 # border-bottom: 2px solid #dee2e6;  
 # border-color: grey  
 # }  
 .nav-link.active {  
 background-color: #fff;  
 border-color: #dee2e6 #dee2e6 #fff;  
 color: #495057;  
 }  
 .nav-tabs .nav-item {  
 margin-bottom: -1px;  
  
 }  
 .nav-link {  
 border: 1px solid transparent;  
 border-top-left-radius: 0.25rem;  
 border-top-right-radius: 0.25rem;  
 padding: 10px;  
 color: #f8f9fa;  
 background-color: #6c757d;  
 }  
 .nav-link:hover {  
 border-color: #e9ecef #e9ecef #dee2e6;  
 }  
 .titlepanel-text {  
 color: black; /\* Set the title panel text color to black \*/  
 }  
 "))  
 ),  
 theme = shinytheme("flatly"),  
 titlePanel(div(img(src="LPA.png", height = 50,style = "padding-right:10px;padding-bottom:5px"),HTML("<b>LinkedIn Profile Analyzer</b>"), style = "display:inline-block;width:100%;text-align: center;text-shadow: 2px 2px grey;color: #000000; padding-bottom: 50px;")),  
 style = "background-color:#D3D3D3;",  
 sidebarLayout(  
 sidebarPanel(  
 fileInput("profile\_pdf", div("Upload LinkedIn Profile PDF:", style = "color: #000000;text-shadow: 1px 1px grey;"), accept = c(".pdf"), buttonLabel = div("Choose File", style = "color: #000000")),  
 tags$style("  
 .well {   
 background-color: #D3D3D3;  
   
 }  
  
 .progress-bar {  
 background-color: green;  
   
 }  
   
 "),  
   
 div(style="display:inline-block;width: 100%;text-align: center;",actionButton("submit", "Run Analysis", icon("paper-plane"),   
 style="color: #fff; background-color: #089305; border-color: #089305; box-shadow: 0 8px 16px 0 rgba(0,0,0,0.2);")),  
 width = 4,  
 ),  
  
   
 mainPanel(  
 tabsetPanel(  
 tabPanel(div("Score", style = "; color: #000000;text-shadow: .25px .25px grey;"), plotlyOutput("dynamic\_score", height = 'auto',width = 'auto')), # Updated to use plotlyOutput  
 tabPanel(div("Evaluation", style = "color: #000000;text-shadow: .25px .25px grey;"), uiOutput("dynamic\_evaluation",style = "padding: 20px; color: black;" )),  
 id = "tabs"  
 ),  
  
 style = "background-color: #D3D3D3;box-shadow: 0 16px 32px 0 rgba(0,0,0,0.2); border-radius: 10px;padding: 10px;"  
 ),  
  
 )  
)  
  
# Define server logic  
server <- function(input, output) {  
 profile\_data <- eventReactive(input$submit, {  
 req(input$profile\_pdf)  
 # Extract text from PDF  
 pdf\_text <- pdf\_text(input$profile\_pdf$datapath)  
 # Concatenate all pages  
 full\_text <- paste(pdf\_text, collapse = " ")  
 full\_text  
 })  
   
 evaluation\_results <- reactive({  
 evaluate\_profile(profile\_data())  
 })  
   
 # Render the score using plotly for a dynamic gauge visualization  
 output$dynamic\_score <- renderPlotly({  
 score\_data <- evaluation\_results()  
 gauge\_value <- score\_data$score  
 plot\_ly(  
 domain = list(x = c(0, 1), y = c(0, 1)),  
 value = gauge\_value,  
 title = list(text = "Score"),  
 type = "indicator",  
 mode = "gauge+number",  
 gauge = list(  
 axis = list(range = c(0, 100)),  
 bar = list(color = "darkblue"),  
 steps = list(  
 list(range = c(0, 50), color = "red"),  
 list(range = c(50, 75), color = "yellow"),  
 list(range = c(75, 100), color = "green")  
 )  
 )  
 ) %>%   
 layout(margin = 1) %>%   
 layout(plot\_bgcolor='#D3D3D3') %>%   
 layout(paper\_bgcolor="#D3D3D3")  
 })  
 output$dynamic\_evaluation <- renderUI({  
 eval\_data <- evaluation\_results()  
 details <- paste("Evaluation Details:", unlist(eval\_data$details), collapse = "<br>")  
 HTML(details)  
 })  
}  
  
# Set the URL  
url <- "https://everyonesocial.com/blog/linkedin-profile-optimization/"  
# Read HTML content from the webpage  
page <- read\_html(url)  
# Keywords to check in the content  
keywords <- c("Profile", "Background", "Banner", "Headline", "Summary", "Experience", "Education", "Skills", "Certifications")  
# Extract the section of interest  
content <- page %>%  
 html\_nodes(xpath = "//h2[contains(., 'LinkedIn Profile Optimization Tips for Maximum Exposure')]/following-sibling::node()[not(self::h2)]") %>%  
 html\_text() %>%  
 paste(collapse = "\n")  
# Function to check for keywords presence  
check\_keywords <- function(content, keywords) {  
 results <- sapply(keywords, function(keyword) {  
 if (grepl(keyword, content, ignore.case = TRUE)) {  
 paste(keyword, ": Present")  
 } else {  
 paste(keyword, ": Not Present")  
 }  
 })  
 return(results)  
}  
# Check for keywords in the content  
keyword\_results <- check\_keywords(content, keywords)  
# Print the content and keyword check results  
cat("Extracted Content:\n", content, "\n\n")

## Extracted Content:  
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
## When it comes to optimizing your LinkedIn profile, there are a few steps and areas to focus on. Some are super basic and others are a bit more advanced that maybe you have not thought about before.   
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
## LinkedIn Profile Optimization Basics:   
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
## 1. Choose a strong profile pic  
##   
##   
##   
##   
##   
## When setting up your profile, you want to ensure you upload a strong and clear profile picture.   
##   
##   
##   
##   
##   
## Something that shows your face ensures your networks and recruiters trust who you are. For best image quality and fitting, ensure your profile picture for LinkedIn is at least 400 X 400 px.   
##   
##   
##   
##   
##   
## Also, when you click your picture on your profile, you have some settings to consider for how your image is shown. We recommended doing the option of “All LinkedIn Members” or “Public” to allow search engines to find your profile more easily.   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
## 2. Utilize the background photo  
##   
##   
##   
##   
##   
## While your profile picture is more focused on you, there is also the background image on your profile that you should utilize, as well. This can be related to your work or passions, but also can be more creative about the company you work at currently.   
##   
##   
##   
##   
##   
## This may also be referenced as the banner image or wallpaper for your profile. Ensure the image is 1584 px wide by 396 high px (4:1 proportion) for best quality.   
##   
##   
##   
##   
##   
## Our EveryoneSocial team has a few designs created for employees if they want to use, or they can create something of their own. For example, here is one of our banner images:  
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
## 3. Be smart with your profile headline  
##   
##   
##   
##   
##   
## If you are passionate about networking and building a unique personal brand, it pays to be a bit creative and descriptive with your profile headline. In the early days of LinkedIn, it was primarily about the title of your current position and that was usually it.   
##   
##   
##   
##   
##   
## But today it’s more important to use the 220 character space to include relevant keywords and descriptive of your expertise.   
##   
##   
##   
##   
##   
## For example, which of these do you think stands out most and will resonate with recruiters or others in your industry?  
##   
##   
##   
##   
##   
## Leader At EveryoneSocial | Social Seller   
## Empowering Sales Leaders With Social Selling | VP of Sales at EveryoneSocial   
##   
## While both include a keyword, the second one flows much better, is more interesting, and also is descriptive of your current role.   
##   
##   
##   
##   
##   
## Play around with various headlines, switch them up occasionally, and don’t be afraid to get creative!   
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
## 4. Your about section = your story   
##   
##   
##   
##   
##   
## One LinkedIn profile optimization tip you should focus on is your summary. This is a great place to tell your story in 2,000 characters or less. Utilize keywords and update as often as you need to ensure relevancy and accuracy.   
##   
##   
##   
##   
##   
## The first 265-275 characters will show before someone will have to click “See More” for the rest of your summary content. Your opening lines should be how you “hook” a profile visitor in that tells who you are, what you care about, and what you aspire to do.   
##   
##   
##   
##   
##   
## Right after this section, you should consider adding some awesome media you were involved in like documents, links, videos, etc. It’s a great way to show off your expertise and talent along with your summary.   
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
## 5. Fill out your work experience  
##   
##   
##   
##   
##   
## While LinkedIn profile optimization is more than just talking about your work experience, you definitely should still fill this section out. How in-depth you want to go with each work experience is up to you, but focus on some of your main achievements.   
##   
##   
##   
##   
##   
## Some tips when filling this section out:   
##   
##   
##   
##   
##   
## Don’t add every previous job, if you have a long work history.   
## Focus on the best achievements related to your career.  
## Make sure to update consistency, even current jobs when new goals or projects are completed.   
##   
## 6. Show off your education and skills  
##   
##   
##   
##   
##   
## Another great section to fill out is where you put your education and credentials.   
##   
##   
##   
##   
##   
## While your overall experience matters in the work field, many recruiters and people in your network may be curious about your education and skills. Plus when you add skills, others in your network may start endorsing those qualities you select, improving your trust factor.   
##   
##   
##   
##   
##   
## These are the sections on your profile to add your knowledge:  
##   
##   
##   
##   
##   
## Education  
## Licenses & Certifications  
## Skills & Endorsements  
##   
## Bonus: While not as impactful as it was in the early days of LinkedIn, you could ask for some recommendations. This is useful if you are job hunting especially, but not something worth spending a lot of time on otherwise.   
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
##   
## Want expertly crafted content to help refine your marketing, social selling, and recruiting strategies? Sign up for our newsletter and get a copy of our Personal Brand Starter Kit. 👇  
##   
##   
##   
## hbspt.forms.create({  
## region: "na1",  
## portalId: "432617",  
## formId: "24447f0c-baf2-4589-975d-62c4d5c68b93"  
## });  
##   
##   
##   
##    
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
## LinkedIn Profile Optimization Advanced:   
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
## 7. Edit your profile URL  
##   
##   
##   
##   
##   
## One setting that is easy to neglect and overlook when optimizing your LinkedIn profile is your profile URL. You can actually edit that URL to be clean, like your first name and last name. And changing this is super easy to do when you know where to look.   
##   
##   
##   
##   
##   
## Go to your profile and in the upper right corner, you’ll see “Edit public profile & URL.” Once the page refreshes, you’ll say in the upper right corner and then you can change the URL to something cleaner beyond a bunch of numbers and letters.   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
## Beyond making the LinkedIn profile URL looking clean, it can help search engines index your profile and make it easier for people to find you on the network.   
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
## 8. Create your profile in another language  
##   
##   
##   
##   
##   
## One feature you might not realize is available to your LinkedIn profile is the ability to create your profile in a language that is different from your default profile.   
##   
##   
##   
##   
##   
## You can’t change the language of your primary profile, but you can actually create as many additional language profiles as you’d like — as long they are in the options available.  
##   
##   
##   
##   
##   
## If you are multilingual and like to connect with people that speak other languages, this could be a cool feature to enable.   
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
## You can easily set this up by going to your profile on the right side, click “add a profile in another language,” and follow the prompts to get set up.   
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
## 9. Record name pronunciation  
##   
##   
##   
##   
##   
## Do people have trouble pronouncing your name without hearing you say it? Is your name spelled a certain way that could be pronounced differently? A great way to get ahead of that is to enable the name pronunciation feature on LinkedIn.   
##   
##   
##   
##   
##   
## This was added not too long ago, but as simple as it is, I think it was a solid addition. I’ve come across numerous profiles myself over the last year where Linkedin profiles are taking advantage of it.   
##   
##   
##   
##   
##   
## In order to add it and record your pronunciation, you have to access your profile from the LinkedIn mobile app. It does not allow you to record via desktop currently.   
##   
##   
##   
##   
##   
## When you are on the app, go to your profile, click the pencil icon across from your profile picture, and have your name you’ll see a section that says “add name pronunciation.”   
##   
##   
##   
##   
##   
## Click that and you can record right from the app and save it to your profile for people to hear before connecting with you.   
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
## Bonus: If you have an easy name to pronounce, you can also use this opportunity to record a brand statement. Maybe you record what you do, what you are about, your mission, etc. It allows some personalization to your profile and helps make it clear to profile visitors about your knowledge and work.  
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
## 10. Avoid overused buzzwords  
##   
##   
##   
##   
##   
## Oh, buzzwords. You probably have a few in mind that you see overly-used or make you cringe when you see them. These are adjectives that you’ll often see on LinkedIn headlines or summaries that add no real value to the profile.   
##   
##   
##   
##   
##   
## Think of terms like “Experienced, Leader, Expert, Guru, Innovative, Certified, etc.   
##   
##   
##   
##   
##   
## This doesn’t mean that there isn’t value in these terms at all in some instances. The problem is just because you use these terms to describe yourself, doesn’t mean they are convincing enough to people viewing your profile.   
##   
##   
##   
##   
##   
## People will see you as an “expert” or “innovative”  when you provide value through content, show your work experience off, and when you engage with others. That’s where you demonstrate what you are all about, not through utilizing buzzwords all over your profile.   
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
## 11. Start writing, sharing, & engaging  
##   
##   
##   
##   
##   
## As you start to clean up your LinkedIn profile, it’s time you also start engaging and getting active! There are many ways to do so, even if you aren’t into building a massive personal brand.  
##   
##   
##   
##   
##   
## Start writing! Share insights into things you’ve learned in your career, expert insights into your industry or job position, and keep providing value. You don’t need to post every day, but find the cadence that works for you. It can be a mix of blog posts, text only, video, or image-based content.   
##   
##   
##   
##   
##   
## The other aspect to being seen on LinkedIn and making connections is engagement. This is interacting with others’ content whether a comment, reacting, or resharing. You can tag your network on things (in moderation), too. This is how you boost credibility and reach, plus people love getting engagement and will likely return that on your content, too!   
##   
##   
##   
##   
##   
## An easy way to get involved is if your company or team has an employee advocacy program in place, like EveryoneSocial. You’ll have access to all the best content worth sharing, can pull in feeds that interest you, and engage with company content easier.   
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
## 12. Get your social selling index score  
##   
##   
##   
##   
##   
## Getting your social selling index score might not be for everyone, but it could be interesting to see the number. Everyone’s profile gets a score based on profile optimization, networking, content, etc.   
##   
##   
##   
##   
##   
## According to LinkedIn data, social selling leaders create 45% more opportunities than peers with lower SSI. This can be impactful for your personal brand, generating leads, or finding new opportunities in your career.   
##   
##   
##   
##   
##   
## While this is not an exact way to optimize your profile, it does tell you how well your optimization efforts have one so far.   
##   
##   
##   
##   
##   
## To get your score, head on over to the Social Selling Index page and click get your free score. If you are logged in already to LinkedIn, it will show your score. Otherwise, just log in when prompted.   
##   
##   
##   
##   
##   
## Here’s what mine looks like:   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##   
##    
##   
##   
##   
##   
##   
## So, are you optimizing your LinkedIn profile? Follow the above steps and give your professional social profile a makeover!   
##   
##

cat("Keyword Presence Check:\n")

## Keyword Presence Check:

print(keyword\_results)

## Profile Background   
## "Profile : Present" "Background : Present"   
## Banner Headline   
## "Banner : Present" "Headline : Present"   
## Summary Experience   
## "Summary : Present" "Experience : Present"   
## Education Skills   
## "Education : Present" "Skills : Present"   
## Certifications   
## "Certifications : Present"

# Function to evaluate the profile  
evaluate\_profile <- function(profile\_text) {  
 score <- 0  
 details <- list()  
   
 if (str\_detect(profile\_text, "Profile")) {  
 score <- score + 10  
 details$photo <- "Profile picture is set (+10 points)."  
 } else {  
 details$photo <- "No profile picture found (0 points)."  
 }  
   
 if (str\_detect(profile\_text, "Background|Banner")) {  
 score <- score + 10  
 details$background <- "Background photo is set (+10 points)."  
 } else {  
 details$background <- "No background photo found (0 points)."  
 }  
   
 if (str\_detect(profile\_text, "Headline")) {  
 score <- score + 10  
 details$headline <- "Headline is well-crafted (+10 points)."  
 } else {  
 details$headline <- "Headline is missing or poorly crafted (0 points)."  
 }  
   
 if (str\_detect(profile\_text, "Summary")) {  
 score <- score + 10  
 details$about <- "About section is well-crafted (+10 points)."  
 } else {  
 details$about <- "About section is missing or incomplete (0 points)."  
 }  
   
 if (str\_detect(profile\_text, "Experience")) {  
 score <- score + 20  
 details$experience <- "Relevant work experience is listed, try to add bullet points where you add relavent experience and skills you got use in that job role (+20 points)."  
 } else {  
 details$experience <- "Work experience section is incomplete (0 points)."  
 }  
   
 if (str\_detect(profile\_text, "Education") && str\_detect(profile\_text, "Skills")) {  
 score <- score + 30  
 details$education\_skills <- "Education and skills are well documented try to keep it updated with relavent job description (+30 points)."  
 } else {  
 details$education\_skills <- "Education or skills are missing which are very crucial (0 points)."  
 }  
   
 if (str\_detect(profile\_text, "Certifications|Publications")) {  
 score <- score + 10  
 details$url <- "Certifications and Publications are well documented, keep it updated (+10 points)."  
 } else {  
 details$url <- "Certifications and Publications are missing (0 points)."  
 }  
   
 return(list(score = score, details = details))  
}