

# VELVI



EDITION I - JULY 2018

## THE WELCOME EDITION

JOURNEY begins with an infinitesimal thought

DATA SCIENCE | THOUGHTS | CONVERSATIONS | PHOTOGRAPHY

# Editor's note - Welcome to Velvi

**L**earning from the past has always been an inherent quality of any living being. Currently, I am working as a data scientist in the Bay area, where I work out this trait artificially.

Last week, as I was lying down in my bed thinking the paths traveled by me. And specifically on how my Master's degree has really shaped up me in terms of my education and character. My Master's was in Data Science, and it really thought me the power of data, and how to derive insights from them. I also had the pleasure of meeting people from different background and different countries, and this has helped in my evolution, and I can easily tag these moments as the best in the United States.

I am really grateful for the opportunities granted and especially the people (potential legends) that I have mingled with. With these thoughts flowing, I aspire to do two things:

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*To work on projects that can impact common people, and trigger their interests towards mathematics and data science.*

*Connect the thoughts of my people circle.*

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With these two objectives, welcome to the magazine **VELVI**, where you will find such content and thoughts.

## WHY?

What is the outcome when a data scientist and music artist sit and talk? What would have be the learning curve of a guy with no prior leadership experience who steps into a president role at a college level?

Connecting thoughts of two entirely different fields or people can literally revolutionize the entire world. A closer look at history gives us a plethora of examples. In my case, I have had the opportunity to make friends with people of different countries, ethnic races, and different fields of work, and I see mathematics and data in every field. This fuels the purpose of this monthly magazine.

Of course, one might state the obvious, we can get experts views on any matter from the Internet. Even I say yes to that, but people around me are special to me, and I constantly hear some amazing stories from them which you will never hear anywhere else.

Finally, magazines are fascinating, primarily when it comes to the design. I always wonder, the amount of work done, especially in designing the content, rather than the content themselves. With that, I choose this form of medium to post. And in the August edition, I will speak more on this.

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Anirudh K. Muralidhar  
[www.anirudhkm.com](http://www.anirudhkm.com)



***You are more powerful,  
strong, and important than  
you and how others think***

:)

# Moments with Barani Baskaran...

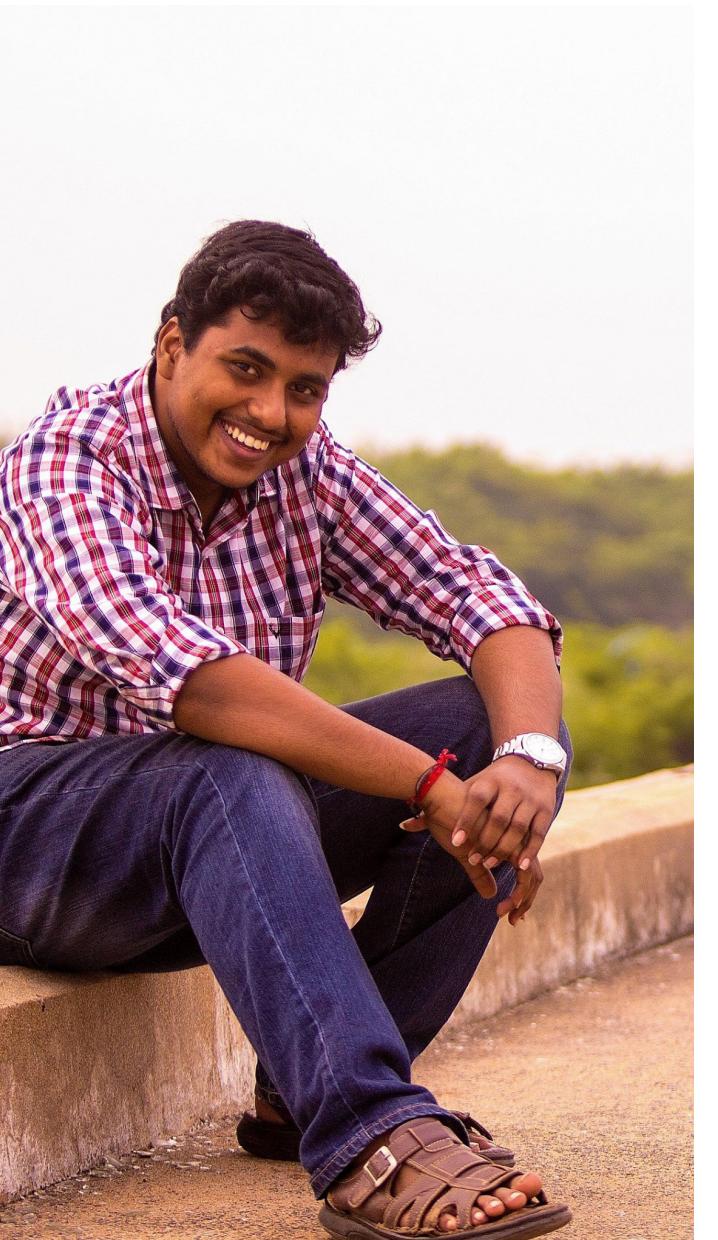
**B**arani is one of my friends that I look up to. He completed his undergraduate degree in Electrical Engineering, and worked as a design engineer with L&T in India. Currently, he is pursuing his Master's degree in Power systems at North Carolina State University.

He has a great love for literature, and has contributed much towards social activities and more areas. In this conversation, we will see what Barani has to say about his experience as the **President of Association of Electrical and Electronics Engineers**, the journey that he went through in organizing the event **Eupraxia**, and the lessons learned.

Eupraxia is an annual symposium event, conducted by the Association of Electrical and Electronics Engineers (AEEE) of SSN College of Engineering, Chennai, India. The event receives around 4,000 students from colleges across the state of Tamil Nadu, who exhibit their skills and use this opportunity to enhance their learning.

The students of the electrical department (~140) take responsibility in organizing the events under AEEE, and as a part of the journey, students have an election process to select the President, who leads from the front.

With this background in mind, let's hear from Barani about his journey as the President:



BARANI BASKARAN

**Anirudh:** Hello Barani, it's a pleasure interviewing you. I'm happy that you are my first guest that we are interviewing for our magazine.

**Barani:** Thanks Anirudh, it's always a pleasure talking with you. Excited for this interview!

**Anirudh:** Barani, we could talk about so many things, but for today, I would like to have a conversation about your journey as the Coordinator of Eupraxia. The reason for this is that most people would be really hesitant to take such roles, considering the huge responsibility attached to the position, and you obviously need to walk with criticism throughout the journey. I personally feel, one needs to have a strong belief in himself to even contest for such a post. So, can you tell us what really motivated you to run for this position?

**Barani:** I think it all started from my school days, where I developed interest towards organizing events. And when I joined my freshman year at college, I just continued with that. Our college had these tech events, and cultural events too. I was more inclined towards the tech side, and since my freshman year I have interacted with seniors who previously organized Eupraxia, and I have assisted them as well. So, the aspiration to contribute was always there, and when the opportunity was presented, I wanted to contest for the President post during my final year.

**Anirudh:** Great, Barani! Awesome! But what key qualities had you brought on board?

**Barani:** I think it's about bringing people together, to make them feel a part of the event. I always had a good rapport with all the students in my department, and I felt I had skill to bring people together, which is extremely key for the president role. That really sets the tone for the whole journey.

*“Bringing people together and make them feel as one is the key”*

**Anirudh:** That really is a key quality, Barani. Glad you could do that. Next, can you walk us through your journey on how you planned for this event and so on? The event happened in August 2013, and you started your work as a president in April, right?

**Barani:** So, the initial part was more of a brainstorming, picking teams for certain events, collecting ideas, what should be done, what not to be done, and so on. Also, we had our previous batch's farewell party, and our batch had to organize that as well, which helped us to know each other more, and brought us closer.

**Anirudh:** Okay, how different was the event when compared to the previous years? What efforts were taken to make it even better?

**Barani:** We wanted the events to be more inspiring and interactive when compared to the previous years. For example, we had many tech displays such as a piano staircase. Whenever someone walks on it, the stairs produced sounds equivalent to a piano note. Then we did something called the perception of vision, where we used LEDs to display whatever we needed. These really caught the attention of the students who participated from other colleges, and I hope it inspired them as well.

**Anirudh:** Great, Barani. Challenges are something that you have faced a lot of throughout this journey. What interesting challenges have you faced, and how did you overcome them?

**Barani:** Hahaha! Obviously, challenges are part of anything that we do. To be honest, we started off with a challenge. For this event, we aren't supposed to get any external funding, we are allowed only to use the college funding. And we faced so many challenges to obtain that funding. Without that, we literally can't start anything, be it the marketing, preparing of the events, and so on. Eventually, we students had to put in our own money to get things started. Also, we had space constraint, and we had another department coming in our building as well. So, we could not find spaces to assemble people, or to work together. But our team was happy enough to sit in lawns, or walkways so that the work didn't get delayed.

**Anirudh:** Can you be more specific on why the funding was delayed?

**Barani:** It was more of a documentation issue, and contacting the right persons to get approval for the funding.

**Anirudh:** Barani, you spoke about your key qualities, can you get into the specifics of your responsibilities?

**Barani:** As I said before, getting people together was always my main goal. And being the lead coordinator of the event, my job was to supervise and make sure

everything is going well, and to make sure that everyone has enough resources to support them. And another thing was to document everything, so that we exactly know our expenditure and were our energies are spent.

**Anirudh:** Barani, you emphasized a lot of the support received from the students, how about the support from the Professors?

**Barani:** Obviously, there was great support from our department staffs as well. Without them, we students are nothing. Especially Prof. Pandiarajan, and our Head of Department Dr. V. Kamaraj. They were always behind us, and we constantly touched base with them in making sure the event was going in the right direction. And they were my source of encouragement.

**Anirudh:** Good to know that, Barani. But at the end of the day, you were just a student who is studying his Bachelors in Electrical Engineering, that comes first right? This president post for the event was just for a semester. So, how did you manage your studies in addition to these responsibilities?

**Barani:** That's a good question, Ani. To be honest, that wasn't a big challenge for me. We had these weekly unit tests which impacts our semester grades. But I felt there was a firm plan on how things were to be done for me. Of course, I had to spend some extra time to get everything done, but it's worth it, right? And as you said, at the end of the day, I'm a student first, not a president, so I can't afford to lose my grade.

**Anirudh:** Haha, that's doesn't surprise me, and to make a point to the audience, Barani was in the top 5 students of the class in terms of GPA, as well. But did you feel the pressure at any point of time?

**Barani:** To be honest, yes I did feel the heat on me. But, you know, I had this wonderful team with me, which really helped me. I was able to delegate my tasks to them, and in terms of support, I was really blessed. Also, I think this applies to anyone, you need to have the team that supports you, and be worthy of getting that support as well. It's not just a give and take thing, it's battling for a same cause.

**Anirudh:** Barani, how was your mental state as the event approached, and on the event day?

**Barani:** As the event got closer, we got ourselves really busy, especially in making sure that the event was happening the way it's supposed to happen. And on the event day, it was quite fun. Almost everything went as planned, and it was delightful that we pulled off such a day. We had close to 7000 registered, which was the first time in the history of Eupraxia, and we launched on-line registration as well. So, event day was really a delight.

**Anirudh:** That's really cool to hear, Barani. On that same night, before you went to sleep, how were you feeling about the journey?

**Barani:** As I said, it was really delightful, and the learning curve was multi-fold. For me, this event with this responsibility gave me a huge amount of confidence to take up any challenge. After I graduated, I worked with L&T for 3 years, and in my current Master's degree, this experience comes in handy. I feel much better in handling situations and how to get things done.

**“Believe in yourselves”**

**Anirudh:** Awesome, Barani! I would like to end this conversation by having your words of encouragement to the people who are reading this.

**Barani:** Ani. The key lesson that I learned is “believe in yourselves”. It's a cliched statement, but it's powerful. Just leave out the fear factor, and start playing the game of life. Of course, one is bound to fail, but that's part of the journey to success. Fail fast, and raise fast, as well.

Most people feel they aren't good with communication and bringing people together. But, intent is powerful, and if you have it, you will get things done.

**Anirudh:** That's a great note to end on, Barani. I wish you good luck, and thank you.

**Barani:** Thank you, Ani. Good luck for your magazine as well.

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<https://goo.gl/97veMb>



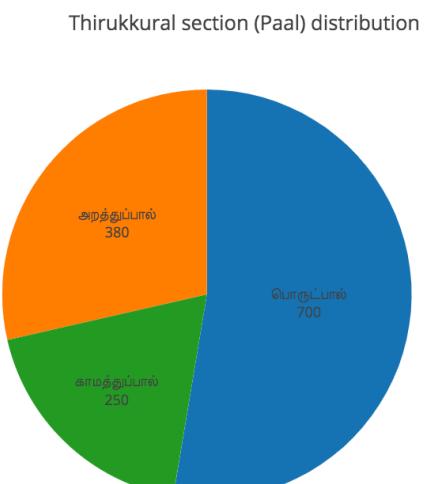
# Thirukural data analysis - Part I

Thirukural is an ancient Tamil literature which speaks about the virtues associated with life. I would suggest you reading the wiki <https://goo.gl/FqQBJA>, which will give you a better understanding of the text.

## Aspiration

I firmly believe that our ancestors were superior than our generation especially when it comes to literature. I'm always been fascinated about the literatures that I have read, especially 4000 Divya Prabhandam, and Thirukural, though ashamed to confess, I definitely don't adhere to the grammar when it comes to speaking to writing.

So there was curiosity to see if there are any hidden patterns in these text, and my definite assumption was, there will be. This inspired me to apply analytics to these texts. I choose Thirukural first because, it has an inherent pattern - each kural contains 7 words (4 in line one, 3 in line two), actually that's amazing right? With that let's see some analytics on this text.



1. SECTION COUNT DISTRIBUTION

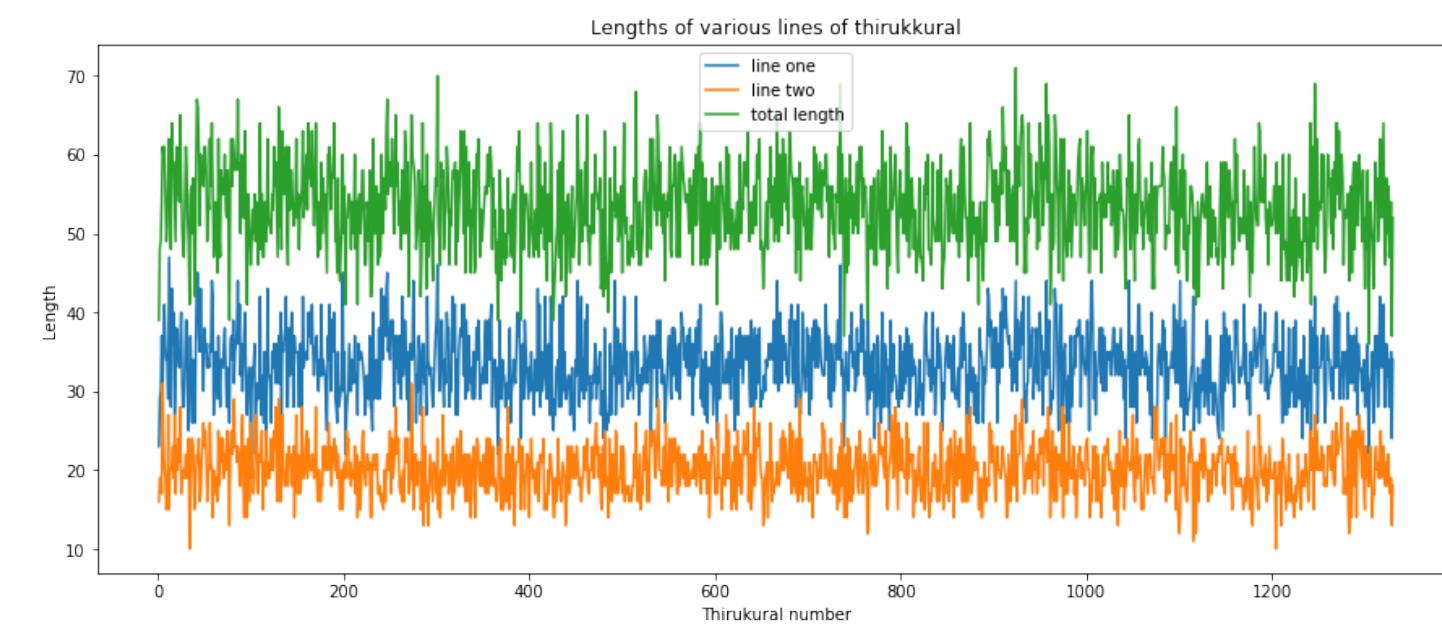
The graph above just gives a basic information on the count distribution across sections (Paal). Porutpaal contributes the most, and Kaamathupaal the least.

Next, we will see trend based on the character count of each Kural. The top graph on the right page provides this trend. More interesting things can be seen when we take the ratio of line one to line two.

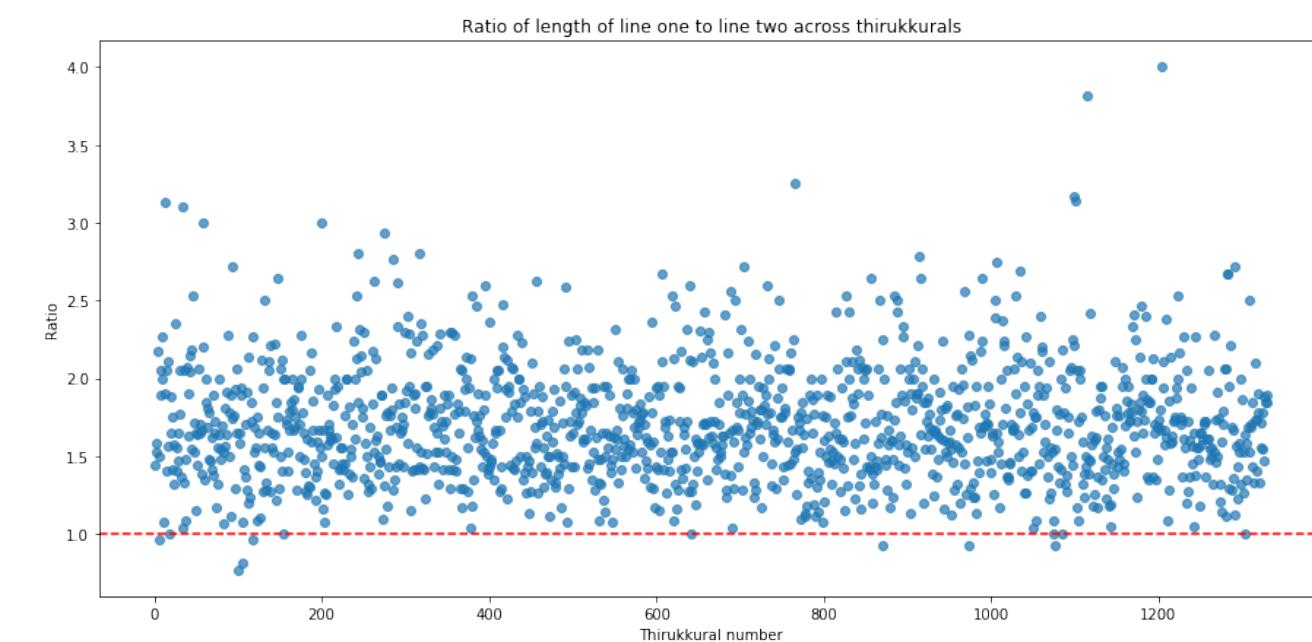
We see most of the Thirukural has more characters in line one than line two. But there are Kurals where the line one and two have exactly the same number of characters, and few of them have more characters in line two than line one. The results for this particular one can be found in the file name `line_ratios.csv` in the Github folder link posted at the end.

Clustering based on the word's character count

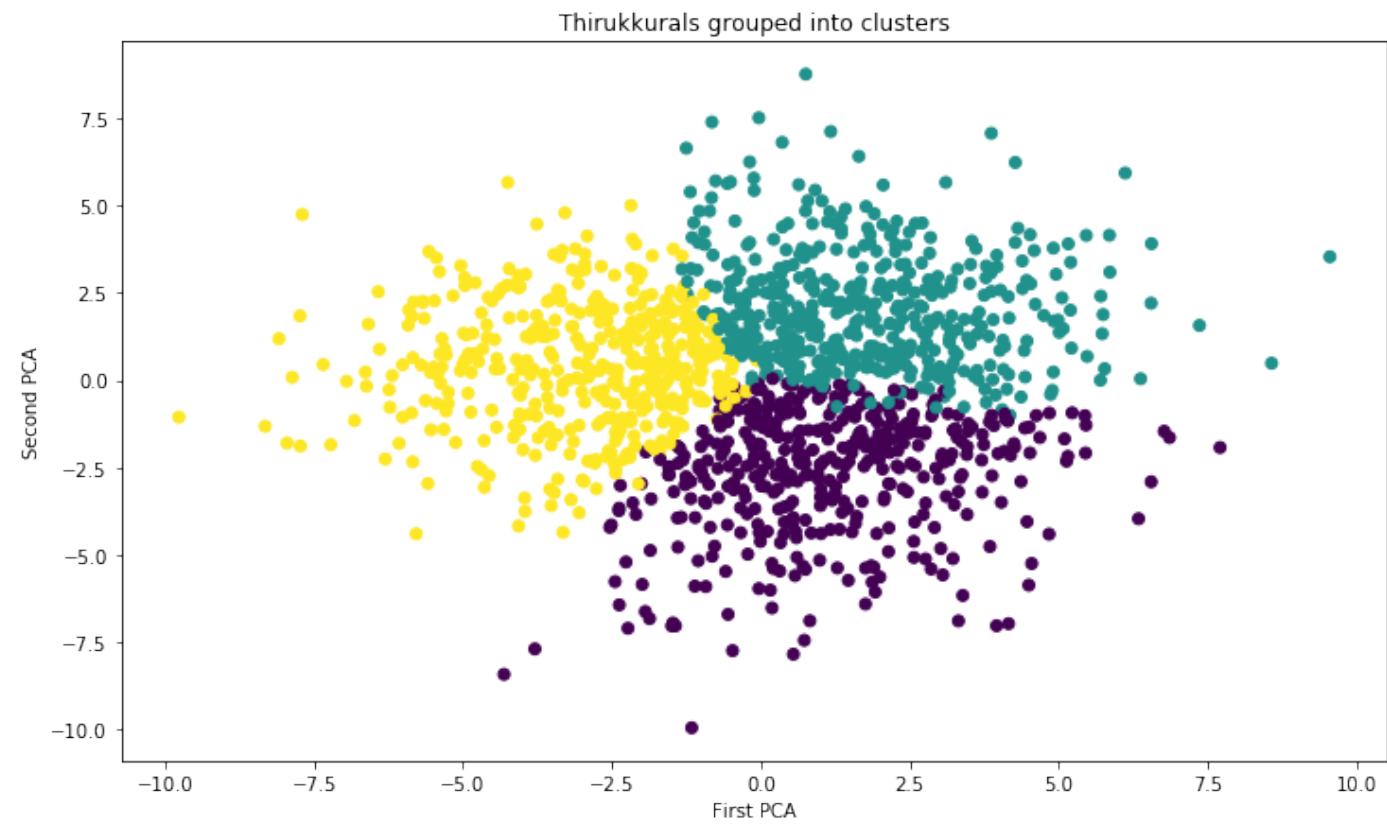
Followed the above analysis, we went at word level granularity i.e calculating the character count in each of the seven words in a given Kural. This leads us to see if there are any pattern based on this particular aspect. So, we used unsupervised machine learning algorithm to find such pattern, and we did observe an interesting pattern. Followed by the model, we applied PCA (Principal component analysis) on the data to reduce it to two dimensions, so as to facilitate plotting.



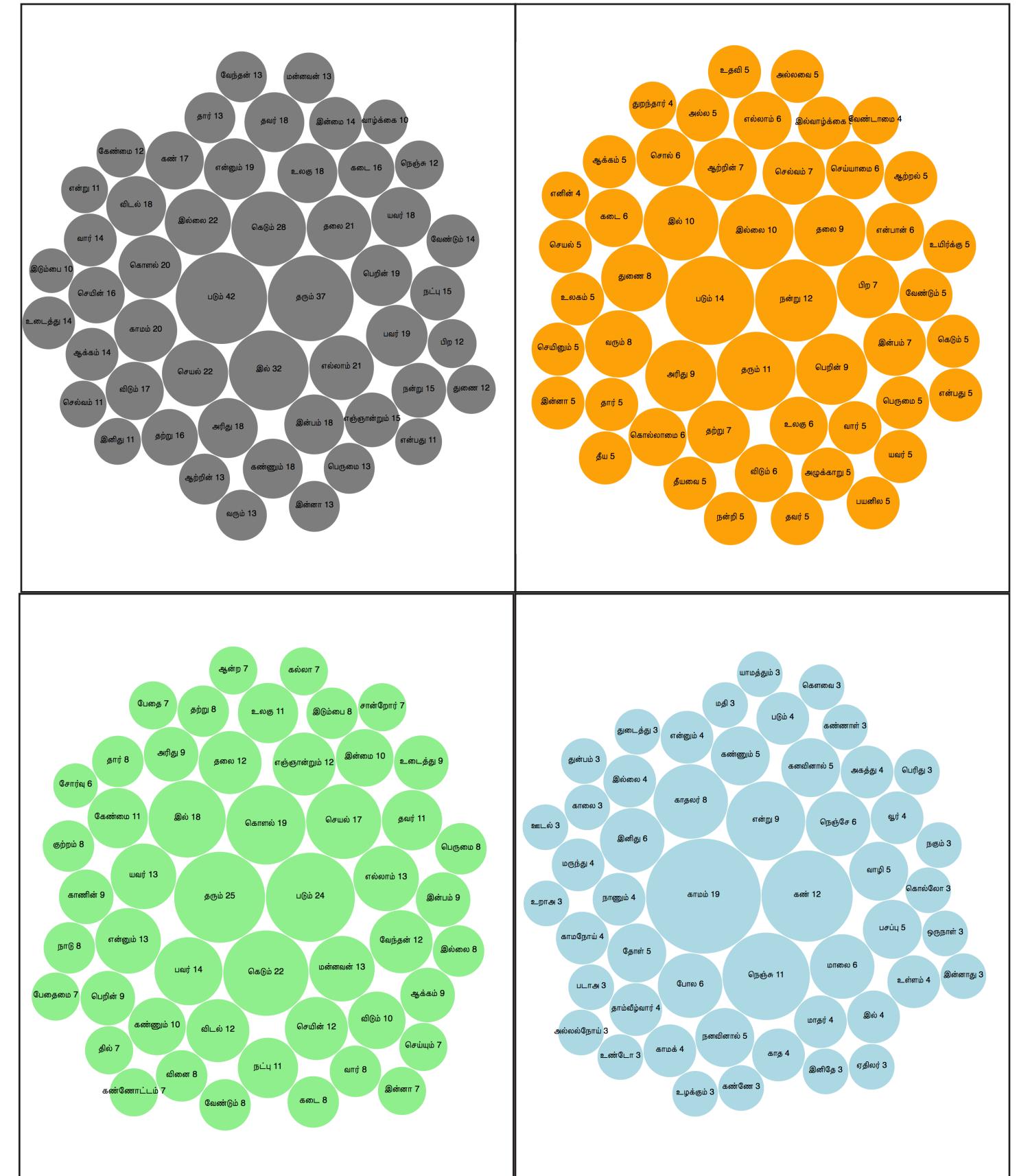
2. CHARACTER COUNT TREND ACROSS KURALS



3. RATIO OF CHARACTER COUNT OF LINE ONE TO LINE TWO



4. CLUSTER PATTERN BASED ON WORD CHARACTER COUNTS



5. WORD FREQUENCY ACROSS (FROM TOP-RIGHT) 1) ALL KURALS 2) ARATHUPAAL 3) PORUTPAAL 4) KAAMATHUPAAL

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supporting us.**

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