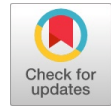


Rise of the Gole Number System

Ravi Revelly



Abstract: For centuries, the decimal number system served various applications, from basic counting to measuring astronomical distances. However, the efficient and human-friendly representation of extremely large numbers remains a challenge. For instance, the distance between the Earth and the Moon is 384,400,000 meters, demanding nine digits in decimal representation. To address these challenges, this paper introduces a new number system called the Gole Number System. This new number system is based on an extended radix system, allowing for a compact and efficient representation of large numbers. Specifically, the Gole Number System, derived from the RNumber system with base 100, reduces the number of digits needed for large numbers, achieving a 50% reduction in representation length. By leveraging unique symbols, Gole number system provides compact numbers that can optimize digital displays, memory usage, and computational efficiency. It also offers a unique alignment with the decimal number system thus making it more familiar to human cognitive ability to easily comprehend the value of the Gole number. This compactness can translate to greater efficiency in storing and transmitting data. Potential applications of this number system are, data compression, compact displays, efficient indexing, and secure identification systems. This paper also outlines formal conversion steps and arithmetic operations within the Gole number system, establishing a rigorous mathematical framework for computational applications.

Keywords: Number Theory, Data Compression, Compact Number Representation, Optimal Numeric Encoding, Numerical Optimization, Alternative Number Systems, RNumbers, Gole Number System.

Abbreviations:

RSCII: RNumber Standard Code for Information Interchange

I. INTRODUCTION

Numbers are fundamental to human day-to-day life, pivotal in counting, computations, and data representation. In the digital era, handling and storing vast amounts of data necessitate efficient numerical representation methods. Currently, large datasets are indexed using the decimal system, these datasets are stored in binary format for computational processing but displayed in decimal notation for human readability. The need for efficient numerical representation is more pressing than ever. For instance, the distance between Earth and the Moon is 384,400,000 meters (International Astronomical Union, <https://www.iau.org/public/themes/measuring/>), requiring nine digits to represent.

Manuscript received on 08 March 2025 | First Revised Manuscript received on 25 March 2025 | Second Revised Manuscript received on 07 April 2025 | Manuscript Accepted on 15 April 2025 | Manuscript published on 30 April 2025.

*Correspondence Author(s)

Ravi Revelly*, The Centre of Quantum Science and Technology, International Institute of Information Technology, Hyderabad, (Telangana), India. Email ID: ravi.revelly@students.iiit.ac.in, ravi.revelly@gmail.com, ORCID ID: [0009-0006-9333-2662](https://orcid.org/0009-0006-9333-2662)

© The Authors. Published by Lattice Science Publication (LSP). This is an open access article under the CC-BY-NC-ND license <http://creativecommons.org/licenses/by-nc-nd/4.0/>

The challenge is to achieve the same level of precision with fewer symbols. The Gole Number System, a base-100 representation, addresses this limitation by compressing large numbers while maintaining human readability and computational accuracy.

II. NUMERICAL REPRESENTATIONS

In the current decimal number system, there are nine unique symbols. After the number nine, representing two-digit numbers requires two symbols 1 and 0 to form 10. As the number expands, additional combinations represent progressively larger values. Several other number systems introduced after decimal often lack intuitive readability for human users.

A. Compact Representation Using Hexadecimal

The Hexadecimal system mitigates lengthy symbol issues to some extent by providing a compact numerical representation. However, this notation can be ambiguous for human interpretation due to its inclusion of alphabetic characters (A-F) [1]. As a result, its usage is primarily limited to computers and programming devices. Converting a number from hexadecimal to decimal is a complex process, as it requires mathematical computations that are challenging for humans to perform manually.

Table-I: Representation of Large Numbers in Hexadecimal Format

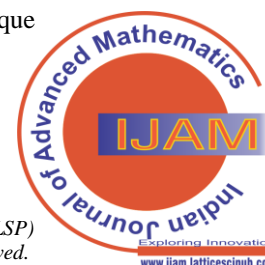
Hexadecimal	Decimal
...	...
...	...
75BCD1375BCD13	123456787123456787
75BCD1475BCD14	123456788123456788
75BCD1575BCD15	123456789123456789
...	...

While hexadecimal reduces the length of decimal numbers, it introduces ambiguity, as symbols like 'A' can be confused with alphabetic characters. Another encoding scheme, Base64, also faces similar challenges. This issue is addressed by the Gole Number System, which utilizes a unique non-ASCII character set to maintain clarity. Thus enabling the representation of large numbers using fewer digits while maintaining readability and accuracy.

Limitations of the current number systems:

- Decimal (Base 10): Requires long sequences for large values.
- Hexadecimal (Base 16): Concise but difficult for humans to interpret.
- Base64 Encoding: Optimized for data storage but not for mathematical operations or human readability.

The Gole Number System addresses these limitations by introducing 100 unique symbols, ensuring compact notation while preserving ease of use.



III. THE PROPOSED GOLE NUMBER SYSTEM

A. Concept and RNumber Representation

Each number system comprises a unique set of symbols equal to its base value. For instance, the binary number system consists of two symbols: 0 and 1. Similarly, the hexadecimal system consists of 16 symbols, incorporating the digits 0–9, followed by the alphabetic characters A–F. R Numbers exhibit similar characteristics; however, they employ symbols not included in the ASCII character set [2]. A new character code set RNumber Standard Code for Information Interchange (RSCII) is used. For performing the experiments to show conversion steps Unicode characters are utilized.

The RNumber system, with a base of 100 referred to as the Gole Number system offers enhanced human readability. The objective is to establish a distinct character set, RSCII, which will be further detailed in the next sections. This standard code is introduced alongside the Gole Number

system. Therefore, the RSCII character set is recommended, despite Unicode Standard 15.0 being employed for experimental purposes.

The Gole Number System is based on the RNumber System, where each number is represented using a unique set of symbols. Unlike decimal (base-10) and hexadecimal (base-16), Gole numbers operate on base-100, allowing a significantly compact representation.

For example:

- Decimal 6789 requires four symbols (6, 7, 8, 9)
- Gole representation requires only two symbols (e.g., ೀు)

B. RNumber with Base 20

The following table shows the sample symbols that were used in RNumber with base 20 during experiments. All the characters/symbols used in experiments are taken from Unicode Standard-15.0 [3].

Table-II: RNumber Base 20 Numerical Representations

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
0	1	2	3	4	5	6	7	8	9	ꣳ	ꣴ	ꣵ	ꣶ	ꣷ	꣸	꣹	꣺	ꣻ	꣼

C. Gole Number Character Index

The following unique representation table is used for experiments of conversion steps, the top row is the index of the Gole number in the decimal system, and the bottom row

is the symbol of the Gole number. This system enables precise, compact numerical representation without confusion with existing language alphabets [4].

Table-III: Symbols in Gole Number Character Index

00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17
0	1	2	3	4	5	6	7	8	9	ꣳ	ꣴ	ꣵ	ꣶ	ꣷ	꣸	꣹	꣺
18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
ꣻ	꣼	ꣽ	ꣾ	ꣿ	꤀	꤁	꤂	꤃	꤄	꤅	꤆	꤇	꤈	꤉	ꤊ	ꤋ	ꤌ
36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
ꤍ	ꤎ	ꤏ	ꤐ	ꤑ	ꤒ	ꤓ	ꤔ	ꤕ	ꤖ	ꤗ	ꤘ	ꤙ	ꤚ	ꤛ	ꤜ	ꤝ	ꤞ
54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
ꤟ	ꤠ	ꤡ	ꤢ	ꤣ	ꤤ	ꤥ	ꤦ	ꤧ	ꤨ	ꤩ	ꤪ	꤫	꤬	꤭	꤮	꤯	ꤰ
72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89
ꤱ	ꤲ	ꤳ	ꤴ	ꤵ	ꤶ	ꤷ	ꤸ	ꤹ	ꤺ	ꤻ	ꤼ	ꤽ	ꤾ	ꤿ	ꥀ	ꥁ	ꥂ
90	91	92	93	94	95	96	97	98	99								
ꥃ	ꥄ	ꥅ	ꥆ	ꥇ	ꥈ	ꥉ	ꥊ	ꥋ	ꥌ								

Users can become familiar with the Gole number system within a few days to weeks and quickly associate each symbol with its decimal equivalent. Eventually, they can

efficiently convert any decimal number into the Gole number system, optimizing both digital and paper storage.

IV. MATHEMATICAL FRAMEWORK AND CONVERSIONS

A. Compact Representations of Decimal using Gole Number

The following table illustrates the Gole number representation for each decimal number, and it is clearly seen that as the number of digits increases in multiples of two, their respective Gole number representation size is reduced to half.

Table-IV: Gole Numbers for Given Decimal Numbers - Set 1

45	100	120	85	48	69	485	48569	7952	100000	100000000	98548796583572
ꣳ	10	13ꣳ	ꣴ	ꣵ	ꣶ	ꣷ꣸	꣹꣺ꣻ	꣼ꣽ	ꣾꣿ꤀꤁	꤂꤃꤄꤅꤆꤇꤈꤉ꤊꤋꤌꤍꤎꤏꤐꤑꤒꤓꤔꤕꤖꤗꤘꤙꤚꤛꤜꤝꤞꤟꤠꤡꤢꤣꤤꤥꤦꤧꤨꤩꤪ꤫꤬꤭꤮꤯ꤰꤱꤲꤳꤴꤵꤶꤷꤸꤹꤺꤻꤼꤽꤾꤿꥀꥁꥂꥃꥄꥅꥆꥇꥈꥉꥊꥋꥌꥍꥎꥏꥐꥑꥒ꥓꥔꥕꥖꥗꥘꥙꥚꥛꥜꥝꥞꥟ꥠꥡꥢꥣꥤꥥꥦꥧꥨꥩꥪꥫꥬꥭꥮꥯꥰꥱꥲꥳꥴꥵꥶꥷꥸꥹꦀꦁꦂꦃꦄꦅꦆꦇꦈꦉꦊꦋꦌꦍꦎꦏꦑꦒꦓꦔꦕꦖꦗꦘꦙꦚꦛꦜꦝꦞꦟꦠꦡꦢꦣꦤꦥꦦꦧꦨꦩꦪꦫꦬꦭꦮꦯꦰꦱꦲ꦳ꦴꦶꦷꦸꦹꦺꦻꦼꦽꦾꦿ꧀꧁꧂꧃꧄꧅꧆꧇꧈꧉꧊꧋꧌꧍꧎ꧏ꧐꧑꧒꧓꧔꧕꧖꧗꧘꧙꧚꧛꧜꧝꧞꧟ꧠꧡꧢꧣꧤꧥꧦꧧꧨꧩꧪꧫꧬꧭꧮꧯ꧰꧱꧲꧳꧴꧵꧶꧷꧸꧹ꧺꧻꧼꧽꧾ꧿ꨀꨁꨂꨃꨄꨅꨆꨇꨈꨉꨊꨋꨌꨍꨎꨏꨐꨑꨒꨓꨔꨕꨖꨗꨘꨙꨚꨛꨜꨝꨞꨟꨠꨡꨢꨣꨤꨥꨦꨧꨨꨩꨪꨫꨬꨭꨮꨯꨰꨱꨲꨳꨴꨵꨶ꨷꨸꨹꨺꨻꨼꨽꨾꨿ꩀꩁꩂꩃꩄꩅꩆꩇꩈꩉꩊꩋꩌꩍ꩎꩏꩐꩑꩒꩓꩔꩕꩖꩗꩘꩙꩚꩛꩜꩝꩞꩟ꩠꩡꩢꩣꩤꩥꩦꩧꩨꩩꩪꩫꩬꩭꩮꩯꩰꩱꩲꩳꩴꩵꩶ꩷꩸꩹ꩺꩻꩼꩽꩾꩿꪀꪁꪂꪃꪄꪅꪆꪇꪈꪉꪊꪋꪌꪍꪎꪏꪐꪑꪒꪓꪔꪕꪖꪗꪘꪙꪚꪛꪜꪝꪞꪟꪠꪡꪢꪣꪤꪥꪦꪧꪨꪩꪪꪫꪬꪭꪮꪯꪰꪱꪴꪲꪳꪵꪶꪷꪸꪹꪺꪻꪼꪽꪾ꪿ꫀ꫁ꫂ꫃꫄꫅꫆꫇꫈꫉꫊꫋꫌꫍꫎꫏꫐꫑꫒꫓꫔꫕꫖꫗꫘꫙꫚ꫛꫜꫝ꫞꫟ꫠꫡꫢꫣꫤꫥꫦꫧꫨꫩꫪꫫꫬꫭꫮꫯ꫰꫱ꫲꫳꫴꫵ꫶꫷꫸꫹꫺꫻꫼꫽꫾꫿꬀ꬁꬂꬃꬄꬅꬆ꬇꬈ꬉꬊꬋꬌꬍꬎ꬏꬐ꬑꬒꬓꬔꬕꬖ꬗꬘꬙꬚꬛꬜꬝꬞꬟ꬠꬡꬢꬣꬤꬥꬦ꬧ꬨꬩꬪꬫꬬꬭꬮ꬯ꬰꬱꬲꬳꬴꬵꬶꬷꬸꬹꬺꬻꬼꬽꬾꬿꭀꭁꭂꭃꭄꭅꭆꭇꭈꭉꭊꭋꭌꭍꭎꭏꭐꭑꭒꭓꭔꭕꭖꭗꭘꭙꭚ꭛ꭜꭝꭞꭟꭠꭡꭢꭣꭤꭥꭦꭧꭨꭩ꭪꭫꭬꭭꭮꭯ꭰꭱꭲꭳꭴꭵꭶꭷꭸꭹꭺꭻꭼꭽꭾꭿꮀꮁꮂꮃꮄꮅꮆꮇꮈꮉꮊꮋꮌꮍꮎꮏꮐꮑꮒꮓꮔꮕꮖꮗꮘꮙꮚꮛꮜꮝꮞꮟꮠꮡꮢꮣꮤꮥꮦꮧꮨꮩꮪꮫꮬꮭꮮꮯꮰꮱꮲꮳꮴꮵꮶꮷꮸꮹꮺꮻꮼꮽꮾꮿꯀꯁꯂꯃꯄꯅꯆꯇꯈꯉꯊꯋꯌꯍꯎꯏꯐꯑꯒꯓꯔꯕꯖꯗꯘꯙꯚꯛꯜꯝꯞꯟꯠꯡꯢꯣꯤꯥꯦꯧꯨꯩꯪ꯫꯬꯭꯮꯯꯰꯱꯲꯳꯴꯵꯶꯷꯸꯹꯺꯻꯼꯽꯾꯿가각갂갃간갅갆갇갈갉갊갋갌갍갎갏감갑값갓갔강갖갗갘같갚갛개객갞갟갠갡갢갣갤갥갦갧갨갩갪갫갬갭갮갯갰갱갲갳갴갵갶갷갸갹갺갻갼갽갾갿걀걁걂걃걄걅걆걇걈걉걊걋걌걍걎걏걐걑걒걓걔걕걖걗걘걙걚걛걜걝걞걟걠걡걢걣걤걥걦걧걨걩걪걫걬걭걮걯거걱걲걳건걵걶걷걸걹걺걻걼걽걾걿검겁겂것겄겅겆겇겈겉겊겋게겍겎겏겐겑겒겓겔겕겖겗겘겙겚겛겜겝겞겟겠겡겢겣겤겥겦겧겨격겪겫견겭겮겯결겱겲겳겴겵겶겷겸겹겺겻겼경겾겿곀곁곂곃계곅곆곇곈곉곊곋곌곍곎곏곐곑곒곓곔곕곖곗곘곙곚곛곜곝곞곟고곡곢곣곤곥곦곧골곩곪곫곬곭곮곯곰곱곲곳곴공곶곷곸곹곺곻과곽곾곿관괁괂괃괄괅괆괇괈괉괊괋괌괍괎괏괐광괒괓괔괕괖괗괘괙괚괛괜괝괞괟괠괡괢괣괤괥괦괧괨괩괪괫괬괭괮괯괰괱괲괳괴괵괶괷괸괹괺괻괼괽괾괿굀굁굂굃굄굅굆굇굈굉굊굋굌굍굎굏교굑굒굓굔굕굖굗굘굙굚굛굜굝굞굟굠굡굢굣굤굥굦굧굨굩굪굫구국굮굯군굱굲굳굴굵굶굷굸굹굺굻굼굽굾굿궀궁궂궃궄궅궆궇궈궉궊궋권궍궎궏궐궑궒궓궔궕궖궗궘궙궚궛궜궝궞궟궠궡궢궣궤궥궦궧궨궩궪궫궬궭궮궯궰궱궲궳궴궵궶궷궸궹궺궻궼궽궾궿귀귁귂귃귄귅귆귇귈귉귊귋귌귍귎귏귐귑귒귓귔귕귖귗귘귙귚귛규귝귞귟균귡귢귣귤귥귦귧귨귩귪귫귬귭귮귯귰귱귲귳귴귵귶귷그극귺귻근귽귾귿글긁긂긃긄긅긆긇금급긊긋긌긍긎긏긐긑긒긓긔긕긖긗긘긙긚긛긜긝긞긟긠긡긢긣긤긥긦긧긨긩긪긫긬긭긮긯기긱긲긳긴긵긶긷길긹긺긻긼긽긾긿김깁깂깃깄깅깆깇깈깉깊깋까깍깎깏깐깑깒깓깔깕깖깗깘깙깚깛깜깝깞깟깠깡깢깣깤깥깦깧깨깩깪깫깬깭깮깯깰깱깲깳깴깵깶깷깸깹깺깻깼깽깾깿꺀꺁꺂꺃꺄꺅꺆꺇꺈꺉꺊꺋꺌꺍꺎꺏꺐꺑꺒꺓꺔꺕꺖꺗꺘꺙꺚꺛꺜꺝꺞꺟꺠꺡꺢꺣꺤꺥꺦꺧꺨꺩꺪꺫꺬꺭꺮꺯꺰꺱꺲꺳꺴꺵꺶꺷꺸꺹꺺꺻꺼꺽꺾꺿껀껁껂껃껄껅껆껇껈껉껊껋껌껍껎껏껐껑껒껓껔껕껖껗께껙껚껛껜껝껞껟껠껡껢껣껤껥껦껧껨껩껪껫껬껭껮껯껰껱껲껳껴껵껶껷껸껹껺껻껼껽껾껿꼀꼁꼂꼃꼄꼅꼆꼇꼈꼉꼊꼋꼌꼍꼎꼏꼐꼑꼒꼓꼔꼕꼖꼗꼘꼙꼚꼛꼜꼝꼞꼟꼠꼡꼢꼣꼤꼥꼦꼧꼨꼩꼪꼫꼬꼭꼮꼯꼰꼱꼲꼳꼴꼵꼶꼷꼸꼹꼺꼻꼼꼽꼾꼿꽀꽁꽂꽃꽄꽅꽆꽇꽈꽉꽊꽋꽌꽍꽎꽏꽐꽑꽒꽓꽔꽕꽖꽗꽘꽙꽚꽛꽜꽝꽞꽟꽠꽡꽢꽣꽤꽥꽦꽧꽨꽩꽪꽫꽬꽭꽮꽯꽰꽱꽲꽳꽴꽵꽶꽷꽸꽹꽺꽻꽼꽽꽾꽿꾀꾁꾂꾃꾄꾅꾆꾇꾈꾉꾊꾋꾌꾍꾎꾏꾐꾑꾒꾓꾔꾕꾖꾗꾘꾙꾚꾛꾜꾝꾞꾟꾠꾡꾢꾣꾤꾥꾦꾧꾨꾩꾪꾫꾬꾭꾮꾯꾰꾱꾲꾳꾴꾵꾶꾷꾸꾹꾺꾻꾼꾽꾾꾿꿀꿁꿂꿃꿄꿅꿆꿇꿈꿉꿊꿋꿌꿍꿎꿏꿐꿑꿒꿓꿔꿕꿖꿗꿘꿙꿚꿛꿜꿝꿞꿟꿠꿡꿢꿣꿤꿥꿦꿧꿨꿩꿪꿫꿬꿭꿮꿯꿰꿱꿲꿳꿴꿵꿶꿷꿸꿹꿺꿻꿼꿽꿾꿿	



Table-V: Gole Numbers for Given Decimal Numbers - Set 2

49750365	57635654870563	8265487603456	346767075474770	546467657573432000
ମତ୍ରୱ	ଶୁଭ୍ରାଣାମ	ୱଷାୱକୱକୱ	ୱନନନନନନନ	ୱୱୱୱୱୱୱୱୱୱୱୱ

B. Decimal Number to Gole Number

A simple and easy step-by-step process can be used to convert a lengthy decimal number to a Gole number and convert it back to decimal.

Let's consider the decimal number 149597870700 and follow the detailed steps that are involved in converting it into its representation in the Gole number system.

The first step is to pair the symbols from right to left order, this is how we identify the position value of each digit in a normal way.

Split the Decimal number into pairs from right to left order as shown below,

14 | 95 | 97 | 87 | 07 | 00

Pairing the digits will result in a range from 00 to 99 and in the next step map the corresponding Gole number for each pair using Table IX. Remembering 99 Gole numbers by index would be not an easy task but at the same time not difficult as well.

Now use the Gole number to Decimal Character Index from Table IX and write the corresponding Gole number for each of the pairs created in the previous step.

Table-VI: Decimal to Gole Number Mapping using Character Index

14	95	97	87	07	00
୲	ୱ	ୱ	ୱ	ୱ	ୱ

Now combine the mapped Gole symbols in the same order that becomes the Gole number ୱୱୱୱୱୱୱୱ. This is how a Gole number is generated for a decimal number. As it is seen the process is very straightforward to convert decimal numbers to Gole numbers and prominently no complex calculations are involved, and it can be done simply by mapping the relevant symbols using the Gole to Decimal Character Index.

C. Gole Number to Decimal Number

Now converting this Gole number back to decimal can be in a similar approach as mapping the Gole digit to decimal and writing it down as below using the same Table 9.

Table-IX: Additions of Two Gole Numbers Along with Decimal Counterpart

$\begin{matrix} 3 \\ +6 \\ \hline 9 \end{matrix}$		$\begin{matrix} 3 \\ +6 \\ \hline 9 \end{matrix}$		$\begin{matrix} 4 \\ +6 \\ \hline ୱ \end{matrix}$		$\begin{matrix} 4 \\ +6 \\ \hline 10 \end{matrix}$		$\begin{matrix} ୱ \\ +ୱ \\ \hline ୱୱ \end{matrix}$		$\begin{matrix} ୱୱ \\ +66 \\ \hline 99 \end{matrix}$		$\begin{matrix} 1ୱ \\ +2 \\ \hline 1* \end{matrix}$		$\begin{matrix} 199 \\ +2 \\ \hline 1* \end{matrix}$	
Gole	Decimal	Gole	Decimal	Gole	Decimal	Gole	Decimal	Gole	Decimal	Gole	Decimal	Gole	Decimal	Gole	Decimal

VI. APPLICATIONS OF GOLE NUMBER SYSTEM

The Gole Number System can be used in broad applications across various fields:

1. Efficient Data Representation: Reduces storage requirements for large numerical datasets.
2. Digital Displays: Optimizes space utilization on screens and digital boards.

Table-VII: Gole to Decimal Number Mapping using Character Index

୲		ୱ		ୱ		ୱ		ୱ		ୱ	
1	4	9	5	9	7	8	7	0	7	0	0

Use the same Gole to Decimal Index table and write the decimal number mapped to the Gole number in the same sequence. Combining all of them in the same order gives you a full decimal representation (149597870700) of the Gole number. It is evident that the conversion of Gole numbers to decimal is extremely easy when compared with other base conversions like binary or hexadecimal to decimal.

V. ARITHMETIC OPERATIONS IN THE GOLE NUMBER SYSTEM

All the arithmetic operations in the Gole number system can be performed like the traditional operations that we perform in the decimal number system; the only difference is that the decimal number consists of 10 symbols whereas the Gole number consists of 100 symbols.

A. Addition

Addition in the Gole Number System follows the same principles as in base-10 but with base-100 carryover.

Table-VIII: Additions of Two Gole Numbers

$\begin{matrix} 3 \\ +6 \\ \hline 9 \end{matrix}$	$\begin{matrix} 4 \\ +6 \\ \hline ୱ \end{matrix}$	$\begin{matrix} 5 \\ +6 \\ \hline ୱ \end{matrix}$	$\begin{matrix} 1ୱ \\ +2 \\ \hline 1* \end{matrix}$
---	---	---	---

Some addition operations performed on Gole numbers along with their decimal counterparts are illustrated below. It is evident that the addition of Gole numbers is quite similar to that of decimal numbers and is straightforward.

3. Cryptography & Security: Offers a novel way to generate compact yet strong encryption keys.
4. Quantum Computing: Facilitates compact numerical representation, useful in multi-state computational models.



VII. GLIMPSE OF PROPOSED RSCII

As mentioned above, a new standard code set, RSCII (RNumber Standard Character for Information Interchange) is being introduced along with the Gole number. Further details will be published in due course. In this section, we will examine a character and its representation in the new standard code set.



[Fig.1: Decimal number 10 in Gole Number Character Index in RSCII]

This paper aims to introduce the Gole Number system; additional insights regarding RSCII will be elaborated upon in future publications. Patent related to this work is mentioned in the references.

VIII. CONCLUSION

The Gole Number System provides a compact, efficient, and human-readable alternative to decimal and hexadecimal notations. By reducing the number of required digits by approximately 50%, it enhances data storage efficiency and computational performance. Future work includes the development of RSCII, a standardized encoding scheme to support Gole Numbers universally. Future research will explore algorithmic optimizations and hardware implementations to further realize the potential of this concept. It is evident now that the distance between Earth and the Sun using the decimal number system using 12 symbols is now reduced to 6 symbols using the Gole number system.

ACKNOWLEDGMENTS

The concept of the RNumber system is inspired by the mathematical legacy of Srinivasa Ramanujan, whose contributions to number theory continue to be influential. This research aims to extend mathematical frameworks in his honor.

DECLARATION STATEMENT

I must verify the accuracy of the following information as the article's author.

- **Conflicts of Interest/ Competing Interests:** Based on my understanding, this article has no conflicts of interest.
- **Funding Support:** This article has not been funded by any organizations or agencies. This independence ensures that the research is conducted with objectivity and without any external influence.
- **Ethical Approval and Consent to Participate:** The content of this article does not necessitate ethical approval or consent to participate with supporting documentation.
- **Data Access Statement and Material Availability:** The adequate resources of this article are publicly accessible.
- **Authors Contributions:** The authorship of this article is contributed solely.

REFERENCES

1. Rajib Mukherjee and Manishita Chakraborty (2023). "Extending Galileo's Ratio to Hex Numbers and Beyond." *Mathematics Magazine*, 96(3), 296–298. DOI: <http://doi.org/10.1080/0025570X.2023.2199704>.
2. "Design of a two-stage ASCII recognizer for the case-sensitive inputs in handwritten and gesticulation mode of the text-entry interface" by Anish Monsley Kirupakaran, Kuldeep Singh Yadav, Naragoni Saidulu, Saharul Alom Barlaskar, and Rabul Hussain Laskar. Published in *Multimedia Tools and Applications*, Volume 83, pages 75101–75145, September 2024. DOI: <http://doi.org/10.1007/s11042-024-18261-5>.
3. Unicode Consortium. (2022). *The Unicode Standard, Version 15.0*. Mountain View, CA: The Unicode Consortium. Retrieved from <https://www.unicode.org/versions/Unicode15.0.0/>
4. Ravi Revelly, "System and Method for Hardware-Driven Low Dimensional Numerical Representation for Enhanced Data Compression and Indexing" India, Patent App. 202441034973, May 2024.

AUTHOR'S PROFILE

Ravi Revelly is a Research Manager at MNC with 15+ years of experience in AI, machine learning, natural language processing, generative AI and engineering. Experience in developing AI solutions for enterprise applications and holds deep expertise in statistical modeling and end-to-end ML deployment. Ravi is currently pursuing a part-time course in Quantum systems at IIIT Hyderabad. He has also published research in cryptography and was a finalist in global AI competitions such as OpenCV AI and AWS DeepRacer. With a passion for innovation, secure systems, and team leadership, he continues to push the boundaries of AI and quantum technologies. Alongside his technical pursuits, Ravi has a growing interest in ancient languages and is currently learning Sanskrit, driven by a fascination with linguistic structure and cultural heritage.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of the Lattice Science Publication (LSP)/ journal and/ or the editor(s). The Lattice Science Publication (LSP)/ journal and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.