

## Super Speedy Chinese Hanzi Input System with Hangul

### An Introduction to AnYin(안음) 3.0

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(Abstract) AnYin 3.0 is the fastest Hanzi computer input system ever invented in the history. It can input up to 400 Hanzi characters per minute(1 분당 400 자), as each syllabic character is created by pushing several appropriate keys at once like playing piano to create a beautiful harmonious sound. It uses Hangul, which is an official writing system of Korean-Chinese (조선족), one of many ethnic minorities in China. It is easy to learn and easy to use. Each character will have its own sound created as it appears on the monitor. Since Hanzi has so many characters, and the standard keyboard has limited number of keys, no one thought it is possible to process it like a short-hand machine without any assistance of expensive short-hand machine. It took many years of experiments and research on the language and computer science. This method of simultaneous input system can be applied to any language and writing system of the world, including all the other ethnic minority groups' writing systems in China.

### Introduction

AnYin(안음) 3.0 is the most fastest input system of Hanzi out of more than one hundred input systems in China. AnYin is also one of the most scientifically developed character input system of Chinese language. It uses Hangul(조선족문자), which is the Chinese Standard Coded Character Set GB 12052-89 (중국표준문자부호 12052-89). GB is an abbreviation of *Guojia Biaozhun* (국가표준) in People's Republic of China (중국인민공화국)

Hanzi is extremely difficult to process in the computer, as it has so many characters to process with the limited number of input keys on the standard keyboard. Therefore, more than one hundred method of Hanzi input systems were developed throughout the world.

One of the most widely used systems in mainland China is called *Pinyin* (병음) input system, which uses Latin characters as an input medium. However, this system is so slow that sometimes it is slower than writing by hand. Hanzi has so many different characters with the same sound that you have to choose one out of many candidates of synonym characters(동음이의어). You have to push appropriate numeric number for it,

or dragging and clicking mouse button on right character or move the arrow to the right character and choose it.

Another most widely used system is called *Ubi* (오필) system, which is much faster than *Pinyin* system, but it takes much longer time to learn it. Also, it has only about 7,300 characters which you can process. Those characters out of these ranges should use other methods, which takes a lot of times. Only 7,300 characters on *Ubi* system is too small numbers considering there are more than 20,000 characters listed in ISO 10646, and in Unicode. Moreover, it takes so much time to learn it that ordinary people can not use this system without special training.

*AnYin* 1.0 was developed with Modern Chinese Small Dictionary (현대한어소사전) in 2005. It has 13,885 vocabularies. It was developed as a Beta version of *AnYin* input system, and it is freely distributed throughout the world. It is still available free of charge on-line at [WWW.ahnmatae.org](http://WWW.ahnmatae.org).

*AnYin* 2.0 was developed with Modern Chinese Dictionary, Fifth Edition (현대한어사전 제 5 판) in 2006. It has approximately 65,000 vocabularies. As it has improved version from the 1.0, it is slightly easier to input than 1.0 version.

*AnYin* 3.0 version will be available in 2007 with additional 250 new characters which were omitted in 2.0 due to there were no assigned code points in either Unicode, nor in ISO 10646. It will have an appropriate sound of each character as one types each syllable. It will be sold on the world market at the price of US \$100 by 단동안마태 계산기개발유한공사, 중국 료녕성 동향시 교남 경제개발구, 해구화원 소구 6 루 동 3 단원 1106 호, 전화 및 전진 0415-7141583, or on [www.ahnmatae.com](http://www.ahnmatae.com)

*AnYin* 3.0 will be sold in the US(미국) to the people who learn Chinese language and its writing system.

## **Decades of Hardship to learn Hanzi**

Developing this easy and most efficient Hanzi computer input system was not invented over night. It was a result of life time learning process of Hanzi, Hangul and computer, and long period of research and development with them.

My life time learning Hanzi was started around 1942, when I started attending primary school. I had to learn Japanese writing systems first. Though I was born in Korea, I was forced to speak Japanese as Korea was the Japanese colony in that time. Japanese not only use *Katakana* and *Hiragana*, but also *kanji*, which is Japanese pronunciation of Hanzi. Both *Katakana* and *Hiragana* are simple syllables (단순음절문자), while *Kanji* is pictographic or ideographic syllables (표의음절문자). As a young boy, I had no choice but to memorize all of these difficult writing systems by repeating the pronunciation of each character or chanting them. Writing them on the paper with pencil or brush was another hard toil. This calligraphy class was one of the methods of

Japanese educators to discipline young children. Therefore, there were no such words like juvenile delinquencies in that period. It was in the World War II period and we were driven like slaves as the subjects of the Japanese emperor.

My learning of Hanzi continued after 1945, when Korea was liberated from Japanese rule. I had to learn how to speak Korean and how to write Korean characters, Hangul, as well as Hanja, which is Korean pronunciation of Hanzi. Korea uses Hanzi until now, but the reading same character this time is completely different from Japanese reading. For instance, the word Japan (일본) is read in Japanese *Nippon or Nihon*, but in Korean it is read *Ilbon*. My learning how to read Hanzi as Chinese pronounce them was in 1960 when I chose Chinese language as a second foreign language when I was attending a University in Seoul, South Korea.

### **Computer Usage in Military**

My first encounter with computer was during my military service in Korea between 1956 and 1959. I was assigned to the US Army as a KATUSA (Korean Augmentation To the United States Army) soldier. The unit I was assigned was the Anti-Aircraft Artillery unit. To shoot down the flying enemy planes, you have to have a fast calculation machine, a computer. You have to have accurate information of plane's flying speed, speed of ammunition, wind speed, altitude of flying object and distance between the gun and the plane. This information should be fed into the computer and the computer has to communicate with the anti-aircraft guns before you fire ammunition. Also in this period, I became familiarized in English word processing on machines, such as typewriters and teletypewriters. I had to communicate with sub-ordinate units located some distance with teletypewriter. We had to use passwords and sometimes with scrambled codes so that our message could not be read to our enemies. I had to use English typewriter to make my reports and to do some homework while I was attending night school: the University of Maryland's extension courses.

### **Computer Keyboard Research**

My research on the Hangul computer keyboard was started in 1977 when I had to publish a monthly Korean language magazine in the US to provide the educational materials to newly migrating Korean immigrants to US. The initial Ahnmatae Orth-Phonetic Keyboard (안마태정음건반) was published in the May Issue of New Life Magazine in 1985, in the name of Ahnmatae Unified Keyboard (안마태통일건반). However, due to more than a hundred times of changes of key positions from this period to 2003 when it was finalized, total Hangul alphabet locations on the keyboard were radically changed.

The simultaneous input systems (동시입력) was theorized early part of 1980's, but the first product came out in China in 1999. It was programmed by Mr. Jin Kwang (김광선생) of Yanbian University (연변대학교), Yanji(연길), Jilin Province(길림성). The first simultaneous Hangul input system was programmed on DOS system.

Keyboard driver for Ahnmatae keyboard was developed by the KAIST (Korean Advanced Institute of Science and Technology), Artificial Intelligence Lab scientists in 2003 to be used on the MS window systems.

Several other computer scientists in South Korea also contributed toward development of Linux systems.

## **Hanzi Development**

Since my knowledge of Hanzi, particularly of simplified Hanzi(간자체), was limited, I had to depend on my Chinese partner, Ms. Cui He Xian (최학선), who has helped me to rearrange the keyboard for Hanzi, but also to transcribe the right pronunciation of Hanzi from Pinyin.

The original Ahnmatae Hangul Phonetic Keyboard was patented in US (Patent # 6,462.678) and in South Korea (Patent #0390361) in my name alone. However, Ahnmatae Ortho-Phonetic Keyboard for Chinese input (안마태정음건반) was patented in China with her name added, as she was the co-inventor (Chinese Patent # 200410048668.X).

## **Ahnmatae Ortho-Phonetic Keyboard (안마태정음건반)**

This keyboard can be used as a short-hand machine as you push several keys simultaneously to extract a syllabic Hanzi character. For instance, to type, *아애니*, Wo Ai Ni (*I love you*), you type H;C+space bar all at once. Hanzi character *아* will appear on screen. When you type J.V+space bar, all at once, it will show Hanzi character *애* on the screen. When you type EKC'+space bar, all at once, it will show Hanzi character *니* on the screen. When each character is typed, it not only shows an appropriate character on the screen, but also it will create its sound at the same time.

## **Reasons for High Speed**

*AnYin 3.0* is much faster than any other systems. Let me compare it with the *Pinyin* system first. To type three scripts as illustrated above, you have to type WO for *아*. There are at least Twenty One (21) scripts with same syllabic sound of WO. Then you have to choose one script by pushing the number assigned to an appropriate script, or drag the prompt on the right script by arrow and push the key to choose it, or click with the mouse button. To type AI for *애* (There are at least 36 scripts with same syllabic sound), you have to go thru the same procedure. So is the NI for *니*. There are at least 34 scripts with the same syllabic sound. So the total stroke is only 9 for three scripts. However, choosing a right script out of so many scripts requires so much time.

*Ubi* system is much faster than *Pinyin*. For WO, you bush one key, Q. For AI, you push three keys: EPD. For NI, you push only two keys: WQ. The total stroke is only 6.

However, with *Ubi* system, you have only ca type about 7,300 scripts. No one knows exactly how many Hanzi scripts there are. But considering there are tens of thousands of Hanzi in various dictionaries, only a few thousand with *Ubi* systems is far shorter than enough.

*AnYin 3.0* lists about 65,000 words now, and we intend to list more characters in the future versions. Whether it is a single script or vocabularies with multiple scripts, it will definitely include more scripts.

*AnYin 3.0* is programmed to display about 1,900 single scripts directly on the monitor with most frequently used ones out of many synonymous syllabic scripts. Other less frequently used scripts will be shown on the screen with other combined scripts, when the typist will push the space bar at the end of the vocabulary. Only the few Hanzi scripts, which are rarely used names of the places or names of individuals, will require manual choosing.

Key positions are arranged in a logical way, by clustering together. The first consonants, *chosung* (초성), are located on the left hand side and vowels, *Jungsung* (중성), are located on the hand side. And tone marks are located on the bottom of the left hand side. The second consonants, *jongsung* (은미), are located on the bottom of right hand side.

### **It uses the most scientific writing system, Hangeul.**

All the linguists in the world agree that Hangeul is known as one of the most scientifically arranged and phonetically accurate symbol marks. The CJKV (Chinese, Japanese, Korean and Vietnamese) word processing guru, Ken Lund, in his book titled CJKV, published in 2000, states that Hangeul is “The most scientific writing system due to its regular and predictable structure”.

There are other phonetic symbols, such as International Phonetic Alphabet (IPA) and Bopomofo (Chinese phonetic symbols). But they are for limited languages and not for other language: IPA for Latin languages only and Bopomofo for Chinese language only.

Chung In Ji(1396-1478), one of the eight scholars of *Jiphyunjun* (집현전) who has assisted King Sejong in the process of inventing Hangeul, described in his book *Hunminjeongeum Haerae* (훈민정음해례) as following.

“King Sejong invented the Hangeul that there should be the natural writing system, where there are sound of nature (유천지자연지성 즉필유자연지문).”

So, Hangeul was invented to write all the sound of nature, including the human language. According to Professor, Byun Jeung Yong of Dongguk University, South Korea, if we follow the instructions laid out by Jung In Ji in *Hunminjeongeum Haerae*, we can create almost 300,000,000 syllabic characters with original Hangeul alphabets.

Hangul was designated by the UNESCO as the world's cultural heritage. Also UNESCO awards annually the Sejong Award to any individual or groups, including nation or international organization, for the best achievement in elimination of illiteracy. Sejong is the name of the king who has invented Hangul in 1443.

## Hangul is easy to learn

Professor Kim Suk Yun of New York State University, Buffalo Campus, once reported that average learning time of Hangul Alphabet by her American students were 45 minutes. My own experience of teaching Hangul Alphabet to average American took about an hour in 1970's. Jung In Ji, in his book described in 15<sup>th</sup> century, that a bright person will learn the Hangul Alphabet in the morning before the noon time, and dullest person will learn it within ten days. It all means that Hangul is so easy that it would not take too much time to learn how to read and write Hangul.

It is amazingly easy to learn because (1) No single Hangul alphabet looks alike visually. (2) Consonants and Vowels are visually different. (3) Each alphabet has only one sound value. Let me describe it in detail.

(1) No Hangul alphabet look alike

English has confusing typography. For example, capital letter 'I' (ai) and small letter 'l' (el) look so much alike, that a non-native English user confuses in reading and writing. However, there is no single Hangul alphabet typography, which looks alike.

(2) Consonants and Vowels are visually look different

In Hangul alphabet, vowels are dot (·), horizontal line (—), vertical line ( | ), and or combination of it.. Consonants are circle (○), square (□), combination of vertical and horizontal lines (⌒, ⊔) or geometrical signs of slush plus reverse slush (∧). Vertical line on top of these basic consonants to make the aspirated sounds (ㅈ, ㅊ, ㅌ). Adding a dot on the top of these will make a harsh sound (ㅊ, ㅌ, ㅆ, ㅈ).

(3) Only one sound value for each Hangul alphabet

In English, alphabet 'a' can be pronounced differently, such as a in the case of ball, ea in the case of another, ei in the case of baby, and a in the case of cola. On the other hand, in Hangul alphabet 'ㅏ' is pronounced 'ㅏ' in the case of cola, and nothing else. Only one exception is 'ㅇ'. Due to the combining of similarly looking 'ㅇ' with 'ㅇ' the sound value changes. When it used in front of vowel, there is no sound value and it is only used as a fill code to make a syllabic script. When it is used after the vowel, it has a sound value of 'ng', a nasal sound.

When it is used with other consonants, it softens the preceding consonant's sound value, such cases as V(빙) and F(퐁) sounds.

## **Hangul Consonants are made by the shape of where the sound is created.**

Hangul is a really amazing invention. It is called a ***Feature Syllables***. Five basic consonants are features of sound making human organs where the sounds are created (후, 아, 설, 치, 순), and three basic vowels are features of Heaven(천), Earth(지) and Man(인).

Adding lines and dots on these basic Hangul alphabets will create different sound valued and combining these consonants and vowels by simple rules can create millions of syllables.

Let me explain the basic consonants in order of sound creating organs when a human face was looked at it from left side.

### ***Basic Consonants***

First place where a consonant sound is made is throat. Throat is a round shaped tube. So the symbol is ㅇ (후음, Laryngeal Sound). The sound value is none when it come before the vowel. When it comes after the vowel, it has the sound value of ng, as in case like going.

Second place is around tongue root. When a tongue root touches inner upper palate, it looks like ㄱ (아음, Velar Sound). The sound value is g, as in case of girl or game.

When tongue tip touches front upper palate and blow the air out, it looks like ㅋ (설음, Apical Sound). The symbol looks like flat stick's front end bent upward. The sound value is n, like Nancy.

Next place where it makes sound is where upright teeth are located. The symbol is ㅈ (치음, Sibilant Sound). It looks like upright teeth. The sound value is s in case like Sun.

The last place to create sound is mouth when both lips are opened. The symbol is ㅁ (순음, Labial Sound). The sound value is m, like Mouth.

### ***Aspirated Sounds***

Aspirated sounds of these basic consonants have a horizontal line on the top of these basic consonants.

“ㅇ” + “ㅡ” is “ㆁ”. However, this consonant is no longer in use. Sound value is not known clearly, however I assume it is like Spanish “x” in case like Mexico.

“ㄷ” + “ㅡ” is “ㄸ”. It has sound value of English “d”, like Dog.

“ㄹ” + “ㅡ” is “ㄺ” which has English “j” sound, like John.

“ㅁ” + “ㅡ” is “ㅃ” which has English sound of “b”, like Bob.

### Harsh Aspirated Sounds

Harsh sound is adding the dot on the top of these aspirated sound alphabets.

“ㆁ” + “ ˙ ” + “ㆁ” which has the sound value of English “h”, like Hand.

“ㄱ” + “ ˙ ” = “ㅋ”, which has the English sound of “k”, like King.

“ㄷ” + “ ˙ ” = “ㅌ”, which has English sound “t”, like Tom.

“ㄹ” + “ ˙ ” is “ㄻ” which has English sound of “ch”, like Church.

“ㅁ” + “ ˙ ” is “ㅍ” which has English sound of “p”, like Peter.

There are hard un-aspirated sounds made by placing same sound script parallel.

“ㄱ” + “ㄱ” = “ㄲ”, which has heavy “g” sound..

“ㄷ” + “ㄷ” = “ㄸ”, which has heavy “d” sound.

“ㅁ” + “ㅁ” = “ㅃ”, which has heavy “b” sound

“ㄹ” + “ㄹ” = “ㄺ”, which has heavy “s” sound

“ㄹ” + “ㄹ” = “ㄻ”, which has heavy “j” sound.

### Combination Consonants (only applicable in Chinese Hanzi)

“ㄹ” + “ㅇ” = “ㄹㅇ”, which has English “r” sound.

“ㄹ” + “ㅇ” = “ㄹㅇ”, which has English “sh” sound.

“ㄹ” + “ㅇ” = “ㄹㅇ”, which has English “zh” sound.

“ㅈ” + “ㅇ” = “ㅊ”, which has English “ch” sound

“ㅍ” + “ㅇ” = “ㅑ”, which has English “f” sound.

“ㄱ” + “ㄱ” = “ㄲ”, which has English “l” sound.

## Hangul Vowels use the Astrogical Relations.

Basic vowels are three essence of universe: Heaven(천), Earth(지),  
Man(인).

It has Yin (음), Yang (양) and neutral forces. Likewise almost all basic vowels have these Yin and Yang forces.

“•” is the sun, a round object, which symbolizes HEAVEN. It has Yang forces. Its sound value is somewhere between “a” sound and “o” sound, like the first crying sound of a baby. It is no longer in use since 1933.

“—” is the flat horizontal line, which symbolizes EARTH. It has Yin forces. Its sound value is like “eu”, which is like a person makes a sound when pushing for a bowl movement.

“|” is the upright vertical posture, which symbolizes MAN. It is neutral. Its sound value is like “ee”.

“ㄷ” is when the sun is located right side of man and therefore, it is Yang force. It is pronounced as “ah”.

“ㄸ” is when the sun is located left side of man and therefore, it is Yin force. It is pronounced as “ea”, like earth.

“ㄹ” is when the sun rises above the horizontal earth and therefore, it is Yang force. It is pronounced as “oh”.

“ㅁ” is when the sun sets down under the horizontal earth and therefore, it is Yin force. It is pronounced as “wooh”

“ㅂ” “ㅃ” “ㅅ”. “ㅆ” are called diphthong vowels. It has added iota on “ㅂ” “ㅃ” “ㅅ” “ㅆ”. It is pronounced as “ya”, in case of Yam, “yeu”, like Young, “yo”, like Yoyo, and “yoo” like Youth.

“ㅝ” “ㅞ” “ㅟ” “ㅠ” are also called diphthong vowels as it combines two or more of basic vowels together. It is pronounced as “wae”, like Wendy, “wi”, like We, “wa”, like Washington, “woa”, like Water.

“ㅡ” “ㅢ” are also called diphthong vowels as it combines with several vowels together. It is pronounced as “wae” “wi”, however, the sound is slightly prolonged than simple double combined similar sounds.

For Chinese Hanzi input purpose only, we added “ㅤ”(eh), “ㅥ”(ihh), “ㅦ”(o), “ㅧ”(wooh) as second vowels. However, due to lack of key spaces on the bottom row, we decided the “ㅤ” could not show on the keyboard. It is invisible, but can be extracted by pushing the bottom row’s “ㅨ” and “ㅩ” together at the same time.

### **Easy to learn the key positions.**

In 1996, I contracted with Professor Jin Sue Ji (김숙자) of Yanbian University, Jilin, China, to test on the time consumed to memorize my keyboard arrays and input speed of Hangul with my keyboard. She has tested initially with four female graduates of medical school. And later, with ten other educational level of attainment, she hired all of these people for research. Amazing results were acquired. It took only 27 minutes average to memorize Ahnmatae keyboard.

It is easy to memorize the key positions as it is arranged logically.

The home row and the upper row are divided into two parts. On the left is the consonants, called *Chosung* (초성), and on the right side is with the vowels, called *Jungsung* (중성). Bottom row on the left are nothing but the tone marks (성조부호). Consonants which comes after vowels, called *Jongsung* (종성) and the second vowels (후모음) are located right side of bottom row..

### **Further research**

Dandong Ahnmatae Computer Development Co. is in the process of developing Ahnmatae Ortho-Phonetic input system with 12 key cellular phone keyboards, which is expected to market in 2007. This system is much faster than T-9 technology, which uses English Alphabets. Most of the cellular phones in China use this input system and the most Chinese phone manufacturers had to pay over \$ 40,000,000 to the US patent holder every year.

When it comes out to market 2007, it will be not only faster than T-9 system, but also China can save lots of valuable dollars. It will be in line with the China’s national policy of 자주창신.

We are moving into the development of English input system. In 2003, when I was interviewed by an American reporter, I explained to him how the Hangul could be used to process English characters. This reporter (OC Register) in California learnt Hangul within a day and wrote an article with my keyboard arrays in it. Interestingly the word he chose was “Fullerton” where the interview was conducted. In English typing it requires 9 strokes while it takes only 3 strokes in Hangul.

When it is developed, it will be sold in the US like hot cakes, as this system can be used as a short hand machine without the expensive machine. It can not only save money but also save a lot of valuable time.

## **Conclusion**

China and Korea was controlled by the Japan in the past century as slave countries. Korea was officially annexed by Japan and became a colony, while China was simply invaded by Japanese Imperial Armed forces and people were driven out of their livelihood and sometimes massacred, like massacre case in Nanjing. Japan became strong country after the 19<sup>th</sup> century Meiji Restoration (명치유신), by opening up its doors to Western industrial cultures while China and Korea kept its doors closely shut. Japan became a strong industrialized country in the industrial age by the consequences.

Now, in South Korea, in this age of IT revolution, it becomes an advanced country. Despite the fact that it had a miserable war and also with no natural resources, it advanced in a rapid pace in IT age. In certain IT technology areas, such as advanced ship buildings and certain areas of telecommunication technologies in Korea, is leading the world. Out of ashes and starvations, South Korea became somewhat an affluent country.

No one doubts that the rapid advancement in South Korea in IT technology is due to its speed of communication with Hangul. Korea is only the country in the world where the people freely communicate with computers and with smaller devices such as cellular phones with its easy and fast writing system, Hangul.

If China wants to advance in IT age, it should adopt its computer input system with GB 12052-89, instead of Pinyin. To input two characters 中国, it requires to type *Zhong* and select one out of 20 synonym *Zhong*. Type *Guo* and select one out of 16 synonyms *Guo*. It takes 10 strokes. With GB 12052-89, it requires only 2 strokes and no selection time is required.

For further inquiry, please contact  
[www.ahnmatae.org](http://www.ahnmatae.org). or write to: [Ahnmatae@ahnmatae.org](mailto:Ahnmatae@ahnmatae.org)

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