Did you know that the answer to the age of the universe has been in front of us the whole time? It's written in the sky and it is being told by the stars, but we have forgotten how to listen.

NASA, CDS, and other various institutions have been gathering a large catalog of accurate information using multi-billion dollar telescopes about the stars in the sky, and it keeps growing. We have only recorded 1% of the night sky in the last few decades, but the problem with this data is too complicated to understand (show table of the data by Vizier). It’s a bunch of nonsense to the average individual.

People in general have a better time recognizing patterns. Constellations are perfect example of pattern recognition of shapes in our sky, and for a long time people from all cultures have been recognizing and defining the shapes in the sky. We wanted to take this disorganized insensible data and make it something visually useful and understandable.

What we created was a program that gathers the data from one of the largest open sourced catalogs in the world (called Vizier) in regards to star data, and we displayed the data in a simple and meaningful way by using the standards of the early 1900s called the Hertzsprung-Russell Diagram (HR Diagram for short).

The HR Diagram lets us understand more about the stars in the sky, their life cycles, spectroscopy (study of how light and matter interact with one another), astrophysics, dark matter (black holes) and energy, the expansion of the universe, and the formation of planets, solar systems, and galaxies. This diagram has even helped us find other earth- like planets within our own Milky Way galaxy.

A lot of this information might seem a bit arbitrary and insignificant, but remember Albert Einstein couldn’t have proven his General Theory of Relativity without the data gathered by astronomers. The information we understand about how gravity can bend time and space has brought about discoveries like matter that is much smaller than atoms. This brings us clean and powerful nuclear power, very accurate GPS that allow us to pin point our locations very accurately, and the concept of warping time and space (which is actually not a science fiction concepts, it is real!).

This information can have a significant impact on the scientific community as well as the possibility to change the world as we know it like Einstein’s General Theory of Relativity. Science is the corner stone to innovation, and new technology, but we found ourselves so deep in these complex concepts that we convoluted the information by trying to sound sophisticated. We wanted to make this complicated data set that gathered by billion dollar space telescopes much easier to understand by giving it a visual representation.

SIDE NOTES:

The HR Diagram is the combination of Annie Jump Cannon, Ejnar Hertzsprung, and Henry Norris Russel work.

Ejnar Hertzsprung - understood distance and luminosity

Annie Jump Cannon and Henry Norris Russell - understood the composition of the sun, and how different heat signature and colors can show different temperatures (kelvin).

Spectrum color is divided into seven broad categories (hottest) O, B, A, F, G, K, and M (coldest) and can differ in subtle ways, so 10 more categories are given in representation of numbers. (Brighter to the left is younger, and dimmer and colder is older stars). Dwarfs stars are dead stars. Giant and super giants are stars on the verge of dying.

Our sun is a third generation star (much older), and it has died two times already. These deaths help us understand planet formations; from the remnants through a chaos of matter- thrown into dust that gather due to gravity and planets formation. We understand most of this because of HR diagram.