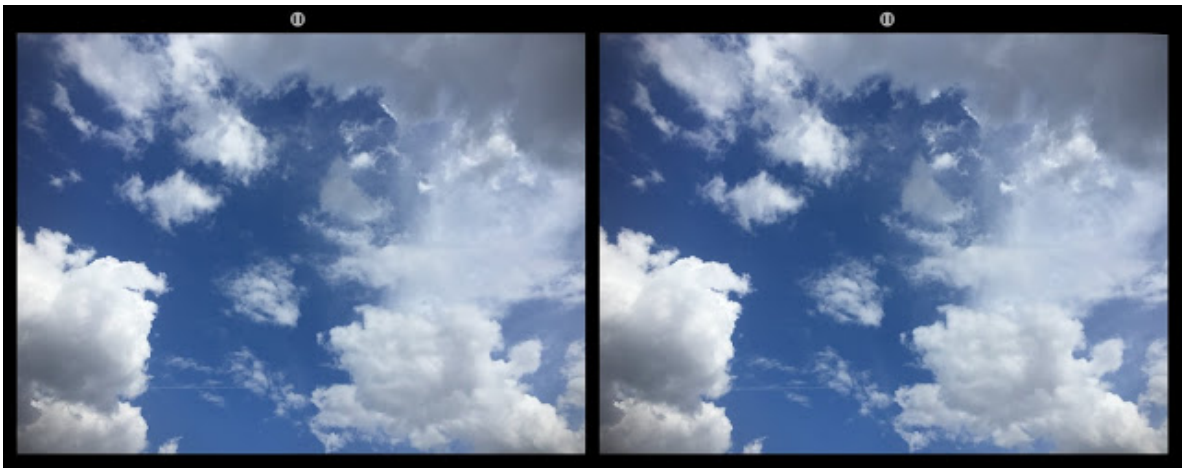
Sunday, June 21, 2020

Period of revolution.

By referring to The curse of dimensionality, several fields are concerned and in particular machine learning, data mining, databases, numerical analysis or even sampling.

The general idea is that when the number of dimensions increases, the volume of space increases rapidly so that the data becomes isolated and becomes sparse.



so I made a 3D animation to illustrate what's up from zero second.

The same image, above seen by a stereoscopic device , may show the same effect.

Its a same photographs available in 3 original different formats.

Tip: The plane (No condensation trail) during the taking of the photo, the plane (photo 2) visible on the very large format of the image on fickr or in the format, below.

Not visible on photo 1

Condensation trails are know as cirrus homogenitus in the new International Cloud Atlas of 2017.

Physico-chemical nature of the trails.

The contrails are clouds. Viewed from a meteorological satellite, these streaks are detectable in the visible day spectrum, but they can be followed even better at all times in the three wavelengths of 8.5, 11.0 and 12.0 micrometers of l 'infrared.

This indicates that they contain liquid water and-or ice crystals and that they influence the radiation balance of the Earth's atmosphere.

The contrails of planes flying under the sun whiten and-or reflect part of the solar thermal energy by sending it back to space before it has had time to warm the ground or the air masses.

This phenomenon tends to cool the lower atmosphere.

The albedo is here the determining phenomenon.

Night flights.

The water vapor and clouds caused by these streaks prevent cooling by reflecting the infrared emitted by the ground towards the latter.

This decreases the night cooling of an otherwise clear sky and therefore

increases warming by trapping the heat radiated by the ground in the lower layers of the atmosphere, as a blanket keeps the sleeper's heat.

flic.kr/p/2je8gib

Stereoscopic vision is normally very precise and fluent, is appreciated from a depth difference of ten centimeters at a distance of ten meters, precision inversely proportional to the distance, and limited in amplitude: it is difficult to see both very close object and a very distant object.

Stereoscopic vision is disturbed, if not prevented, by various image defects: vertical shifts, contradictions in relief, excess of horizontal parallax, obligation of ocular divergence, presence of vertical parallax, ghost images or attenuated vision of the right view by the eye left and vice versa, asymmetry of the luminosity, too fast movements.

The field of view is the measure of the observable world as seen at a given time.

In the case of optical instruments or sensors, it is the solid angle through which a detector is sensitive to electromagnetic radiation.

Human and animal vision.

An animal's visual ability is not uniform across the field of view, and varies from animal to animal.

For example, binocular vision, which is the basis of the perception of depth, covers 114 horizontal degrees of the visual field in humans.

The remaining 60-70 ° of peripheral vision does not have binocular vision because only one eye can see these parts of the visual field.

In some birds, binocular vision can go down to 20 ° or even 10 °.

In remote sensing, the solid angle through which a detector (i.e. a sensor pixel) is sensitive to electromagnetic radiation is called an instant field of view.

It is a measure of the spatial resolution of a remote sensing imagery system, and is often expressed in terms of visible area on the ground, for a given sensor altitude.

The instantaneous field of view per pixel is closely related to the notion of resolved pixel size, resolved distance to the ground, sample distance to the ground and modulation transfer function.

In Astronomy, the field of view is usually expressed as the solid angle observed by the instrument, in square degrees, or for a higher magnification instrument, in square arc minutes.

For example, the Wide Field Channel of the Advanced Camera for Surveys on the Hubble Space Telescope has a field of view of 10 square arc minutes and its High Resolution Channel has 0.15.

Terrestrial telescopes have larger viewing angles.

The UK Schmidt Telescope has an angle of 30 square degrees and the 1.8 m telescope from Pan-STARRS has an angle of 7 square degrees.

The near infrared camera, WFCAM, on UKIRT, 0.6 square degrees. The VISTA telescope, 0.6 square degrees.

When introduced, digital cameras covered only a small field of view compared to photographic plates, although they beat them in terms of quantum efficiency, linear and dynamic intervals, as well as simplifying the process data processing.

In mathematics, this notion corresponds to Euclidean geometry in space.

Space is identified by three orthogonal axes, unlike the plane composed of two dimensions.

The three geometric dimensions are:

- **the width (left / right) of x axis, or abscissa**
- **the y-axis (or ordered) depth (front / rear)**
- **the height (up / down) of the z axis, or dimension**

In mathematics, the notion of dimension is more extensive and is not limited to Euclidean geometry.

Three dimensions or three-dimensional or 3D are expressions that characterize the space that surrounds us, as perceived by our vision, in terms of width, height and depth.

The rising air, due to the progressive decrease in pressure, expands and cools so much that the dew point eventually reaches the temperature of the environment and then forms a cloud. If the vertical push continues, precipitation will form.

The vertical movements in the stratiform clouds are weak, of the order of less than one meter per second, but are exerted on a great thickness of the atmosphere.

The process of cloud formation begins with condensation.

In convective clouds, the upward movement is caused by the temperature difference between the raised air parcel and the colder environment at altitude.

The plot cools upwards but according to the adiabatic thermal gradient, ie less than the temperature of the environment in unstable cases.

It is therefore less dense than the environment and undergoes an Archimedes push up.

This difference is the potential available convection energy (EPCD).

It will be greater if latent heat is released by the condensation of water vapor contained in the plot.

The speed of movement of the air parcel will be proportional to the EPCD and may be several tens of meters per second.

Condensation is rapid there, but the supercooled droplets can persist up to very high altitudes, well below the freezing temperature.

(Cloud physics)

The revolution or movement of revolution is, in celestial mechanics, a movement of periodic, circular or elliptical translation.

The period of revolution can be estimated from several references.

If this period is measured relative to the Sun as observed on Earth, we speak of a synodic period: it is the apparent orbital period of the object around the Sun.

If it is measured in relation to the stars, we speak of the sidereal period.

The latter is considered to be the object's real period of revolution.

If we measure the duration between two passages from the object to its peri-peris, we then have the anomalistic period. Depending on whether the object is in precession or in recession, this period will be shorter or longer than the sidereal period.

If we consider the duration between two passages from the object to its ascending or descending node, we then have the draconian period.

The latter depends on the precessions of the two planes involved: the plane of the object's orbit and the reference plane, generally the ecliptic.

Finally, if we determine the duration between two passages of the object at zero right ascension, we have the tropical period. Because of the precession of the equinoxes, this period is slightly and systematically shorter than the sidereal period.

The rotation period is either the time taken by a star (star, planet, asteroid) to make a spin on itself (about 23 h 56 min 4.3 s for the Earth, for example), or the time at the end from which a planet finds the same orientation compared to its star (24 hours on average for the Earth, for example)

The term should not be confused with the period of revolution of a star, which designates the orbital movement of one body relative to another.

Time could be an additional dimension, the “4th dimension” (as “space-time” tells us) because it can be represented with a space but it would be quite particular given that the sciences do not allow us to calculate the time in a distance from space.

It is not a Euclidean distance because of the minus sign, so time is not a dimension like the others, even after having transformed it into distance thanks to the speed of light. Space-time is therefore not a Euclidean space, but a Minkowski space.

This shows that time is a very special dimension because, while being perpendicular to space, we must accept that a distance measured between two events in time, squared, corresponds to a negative surface: time is therefore a imaginary dimension of space-time.

We can then check the subunits of the degree, The degree, unit of angle measurement: π180 radians, or three hundred and sixtieth of a full revolution.

A degree is subdivided into 60 arc minutes, which are themselves divided into 60 arc seconds.

1 ′ (arc minute) = 1 ° / 60 = 0.016 °

1 ″ (arc second) = 1 ° / 3600 = 0.000 27 °

One minute of arc corresponds approximately to the apparent size of a basketball located at 800 m.

For the second of an arc, the same balloon is located 50 km away.

They are also called minute and angular second, arcminute and arcsecond. (layer of English terms)

The ratio between minutes and seconds is identical in the time domain and in the angular domain. For convenience, minutes and seconds may be defined as if degrees were hours, but this analogy should be used with caution, since there are other units of angles using the word hour.

All these units resting on the sexagesimal system, we can explain that the complete turn was divided into 360 and not into 60 because there is also another subdivision of the whole circle into four equal parts of 90 °, the quadrant, remarkable by its form and used in all cultures and which contains one and a half times the base 60.

No doubt there is a link also and for the same reasons with the fact that the Babylonian calendar counted 360 days.

Differences:

sexagesimal system (base 60) and the decimal system (base 10) for the construction of the subunits.

Unless stated otherwise, the words minute and second in the field of angles refer to the minutes and seconds of arc.

There are homonymous units, but they are only used in specific contexts such as measurement of right ascension, declination.

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Posted by Veronica IN DREAM at 4:58 PM