## Sensors: smart tools for a smart living

Hello everybody, my name is Sfrija Ioan and my associate is Floristean Gabriel! We must confess that we are glad to be here in front of you and hope you’re glad too because you’ll be witnesses to something that you hardly can think, and something that you use every day without knowing this! Ok, we should begin, and I think you’ve already figured out about what we’re going to discuss today because it’s written in the title ”Sensors: smart tools for a smart living “! Yeah, you have heard me well “Sensors”; they are just as magnificent as the name is! I’m sure you have heard about this word before, but have you ever wondered **what they actually are**, **how they work** and **what hard work these sensors carry to make our life easier**? Let’s find out!

OK, the principle of the sensor is simple, and we’ll not get into sophisticated physics theories to explain this: it uses the magnetic field created by an electric conductor to detect different physical phenomena at relatively small distances, and for its purpose there are many types of sensors, about 2000, but we will discuss only those which are used by an ordinary man in daily tasks!

Firstly, the most used gadget among the people nowadays, the smartphone! The new brand smartphones uses no less than 5-8 sensors!   
-Accelerometer, a sensor that measures the acceleration based on the inertia of bodies   
-temperature sensor that works like a thermometer

-Color-sensor which helps you has a pleasant visual experience

-humidity sensor

-proximity sensor which uses the distance to stop the phone screen, especially when you put your phone to your ear in the case of a call not to touch the touchscreen with the face

-touch sensors which captures and records physical touch ,like your finger   
-gyroscope sensor it’s a device that sense the angular velocity ,that allows you to turn your phone and also turn your applications or videos   
-magnetometer which works just like a compass ,it sense the magnetic field in the vicinity of the device

-fingerprint sensor which allows you to block your phone and unblock it just with a touch of a finger

-infrared sensor that helps you using your phone as a remote control for other devices ,like a smart TV  
-brightness sensor which changes the screen brightness depending on ambient light

And others that we use indirectly, but they are part of your smartphone: camera, GPS, Wi-Fi, Bluetooth, GSM/CDMA cell, NFC near field, barometer!

Is it true that you would not expect that? I know, I was just as amazed as you are!

So now, let’s talk about another smart device of the futuristic vision! Let me ask you a question: what do you think about your car being driven by a butler, but hey, the butler is just your car, you don’t have to pay him or give him vacation and it’s always ready when you get in the car? Wouldn’t it be so cool? This is no more a futuristic thing, it’s actual, it happens right now, and we will discuss about smart cars and how they work!

For self-driving cars to be accepted by consumers they will need to replicate human cognitive behavior which is made up of a three-part process:

1) Perception of the environment

2) Decision making based on this perception of the surroundings

3) Timely and accurate implementation the decision

The perception systems can further be broken down into two categories:

a) Proprioceptive Sensors – responsible for sensing the vehicle’s internal state like wheel speed, inertial measurement and driver attentiveness

b) Exteroceptive Sensors – responsible for sensing the vehicle’s surroundings

* Ultrasonic is good for judging a car’s distance to objects, but only at short ranges
* Radar can detect objects at long ranges regardless of the weather but has low resolution
* LI-dar has high resolution but loses sight in heavy snow and rain
* Cameras, on the other hand, lead the way in classification and texture interpretation. By far the cheapest and most available sensors, cameras generate massive amounts of data, and also rely on good visibility.

As you can see in the slides the self-driving will be the future of transportation, because smart means commodity, time-saving and money saving and they are quite safe!

**Conclusions:**

Summing up, for ensuring / in order to ensure an easier life for ourselves, we can depend on sensors because they can simulate human receptors with a higher accuracy and in an ensemble, they can replace our human actions. Frankly, they make our life simpler.

Sigur, tb adaugat Cover Page.

Si era bine sa puncteze si structura (dc aveau Cover page chiar trebuia sa apara acolo -- Si bineinteles si in Script ... "I have divided my presentation into three parts ... etc etc) Eg:

1. Sensor -- Principle of operation

2. Smartphone -- A (smart) world of sensors

3. Sensor-based self-driving cars