

- IoT+ ML: data+ models

Examples: Predictive maintenance, Healthcare, Farming, Smart homes, Smart cities.....

Smart = Data + ML/AI

Data ← Sensors

- Predictive maintenance:
 - Problem definition
 - Prototype-stage startup that we mentored.
 - Industrial accelerometers/ ultrasound(sensors)+
 - Edge computing (microcontrollers) +
 - Data transfer (BLE/ Wifi/ 4G) +
 - Power supply (battery/solar) +
 - Cloud/Servers +
 - Rule based classical systems+
 - ML/DL systems.
- End to end systems.

Health care:

Fitbit/ Apple watches like devices: accelerometers, heart rate, barometer(altitude)...

Case-study: Cardiogram, State of the art DeepLearning [Research Paper]

More sensors: Oximeter, Skin conductance, Skin-temperature, ECG.

Startup-idea: Do this with a \$15-\$50 watch/band.

Smart Farming:

Sensors:

Temperature & humidity sensor, Soil moisture sensor, Illuminance sensor, Electrical-Conductivity sensor for nutrient measurement, Smartphone-Spectrometers.

Cattle-Sensors: Fitbits for Cows.

Applications:

When to provide water/insecticides/fertilizers/shade? How much?

Startup-idea: How to solve this for small-scale farmers?

- Architecture & Tools/Building-blocks
 - Sensors: accelerometers, gyroscopes, barometers,
 - Edge computing: Arduino, Raspberry Pi, ESP8266, Smartphones.....
 - Power: Solar/Battery
 - Servers/Cloud : AWS IoT, Google Cloud, Azure.
 - ML/AI: TensorFlow/Keras, Scikit-learn, XgBoost.
- Startup-potential:

Sensors/IoT	ML/AI	Problems	Startups
GPS	Route Optimization	Transportation	Uber/Ola/Lyft
GPS, Cameras, Depth-Sensors	DeepLearning	Self-driving cars	Waymo/Tesla
Mic, Speakers	DeepLearning	Smart Speaker	Alexa/G Home
Accelerometers, Heart Rate monitors	DeepLearning	Smart watches	Apple/Fitbit
		??	