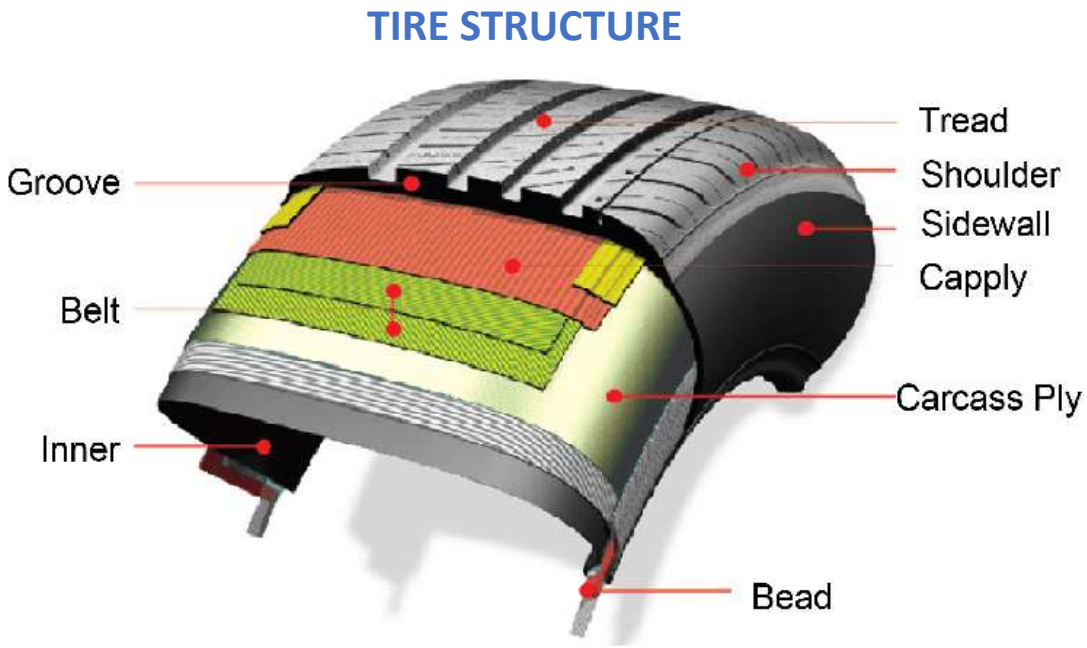
Tire structure and production

The tire is an assembly of numerous components that are built up on a drum and then cured in a press under heat and pressure. The top layer is the tread (*battistrada*), that with the road or the ground.

The assembly process requires a precise overlay of all materials, to ensure quality and durability of final product

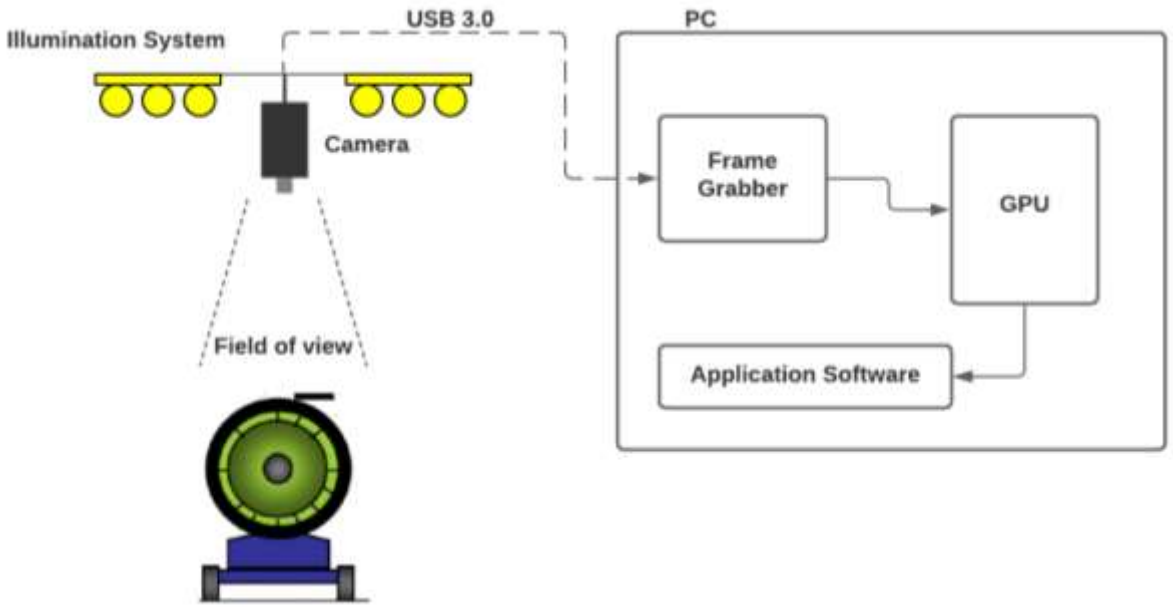
Useful read and video: https://www.bridgestoneamericas.com/en/corporate-social-responsibility/safety/tires-101/tire-construction



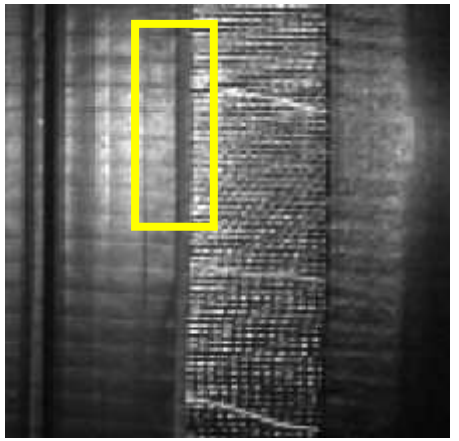
Thesis goal

- The tire is monitored through a vision system that includes a camera and a computer with OpenCV
- The student must buils an image processing application to process photos taken in the different assembly steps
  - Check if the new posed material is in the correct position and is aligned with the other materials (with tolerance)

VISION SYSTEM



EXAMPLE OF PHOTO (SIMPLIFIED)



NEWLY POSED MATERIAL IS THE ONE WITH STRIPED TEXTURE

THE BORDER BETWEEN THE TWO MATERIALS MUST FALL IN THE YELLOW AREA

Company presentation

- Michelin: French multinational tyre manufacturing company, the second largest tyre manufacturer in the world behind Bridgestone and larger than both Goodyear and Continental
- Cuneo plant: largest tire production site in Europe (Piazza Robert Daubree, 12100 Ronchi CN)

- 3 full days (8 hours) presence at the plant per week required
- Reimbursement of expenses
- Languages required: Italian and one between English, French and German