

# DEFECT DETECTION IN DENIMS THROUGH ARTIFICIAL INTELLIGENCE

# GENERAL DEFECTS:

The deformed regions which damage the appearance and performance of a fabric may be called 'a fabric defect'.

WARP  
LACKING

WEFT  
LACKING

HOLE

SOLID  
YARN

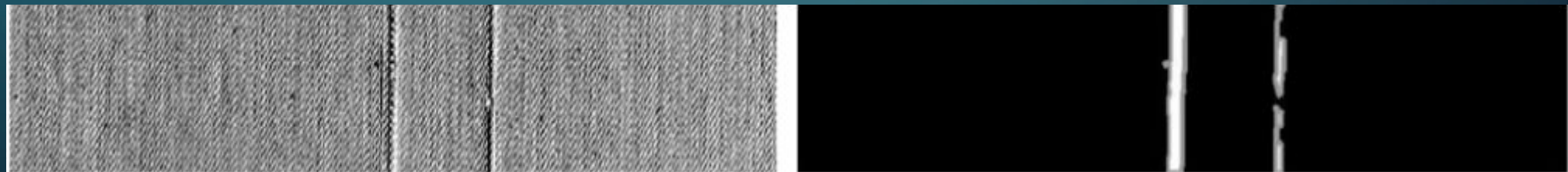
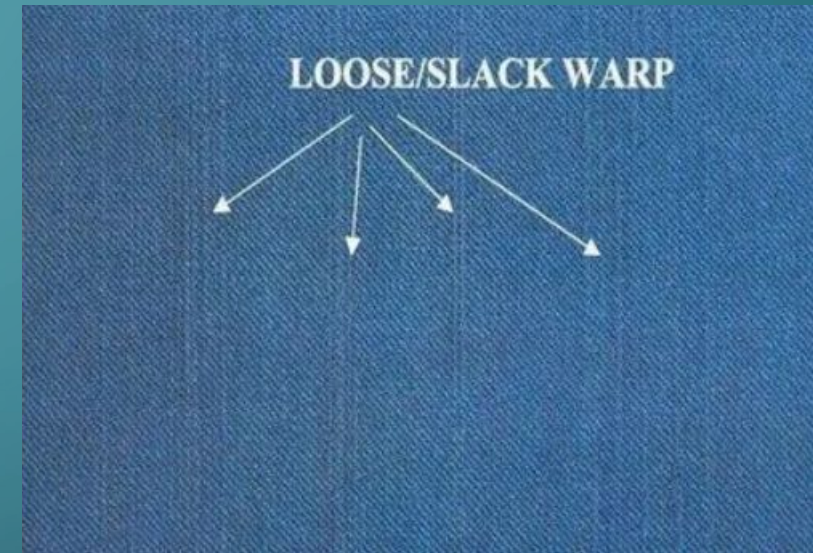
KNOT



# WARP LACKING:

This type of fault is produced in woven fabrics when the tension of warp yarn is slow.

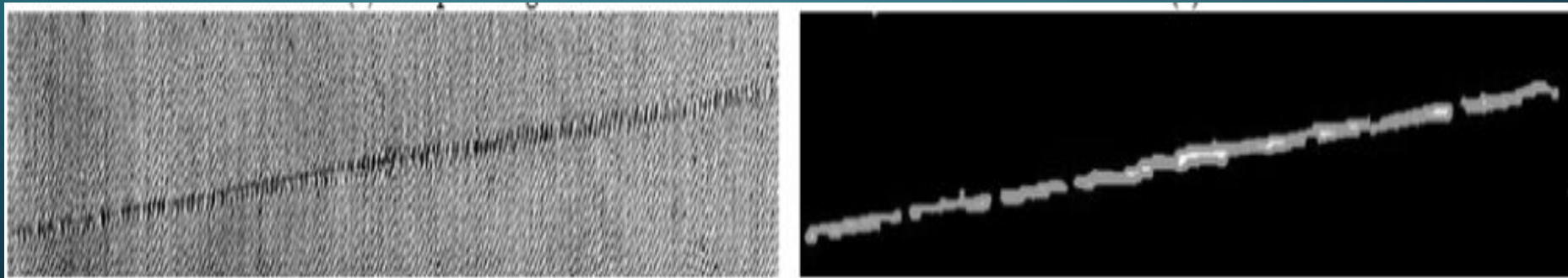
Binary image of the defect:



# WEFT LACKING:

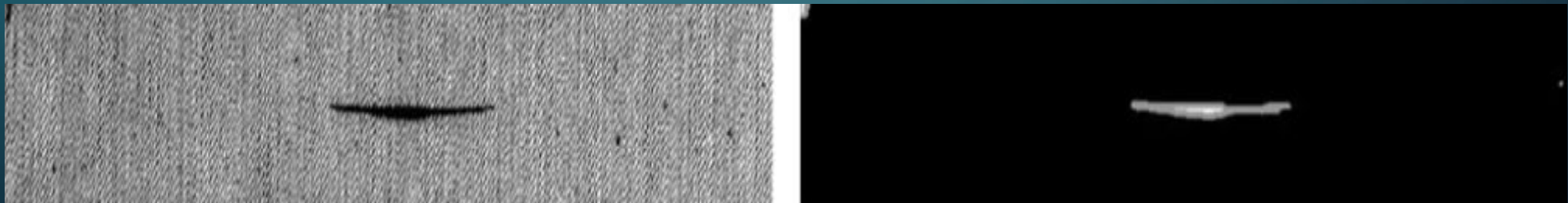
It is produced in woven fabrics due to the looseness of filling yarn.

Binary image of the defect:



# SOLID YARN:

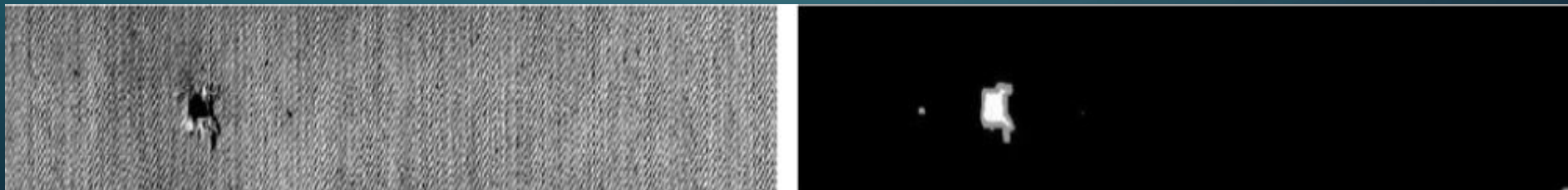
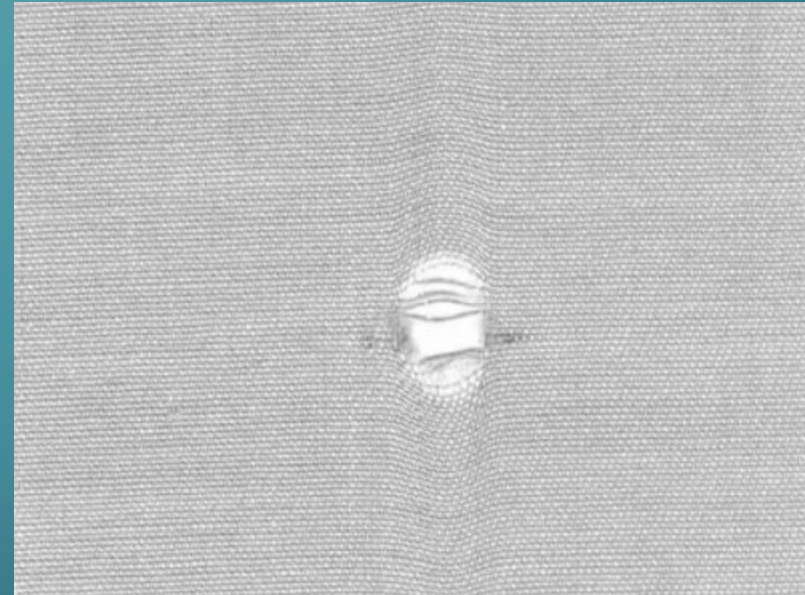
A filling yarn that is broken in the weaving of fabric.





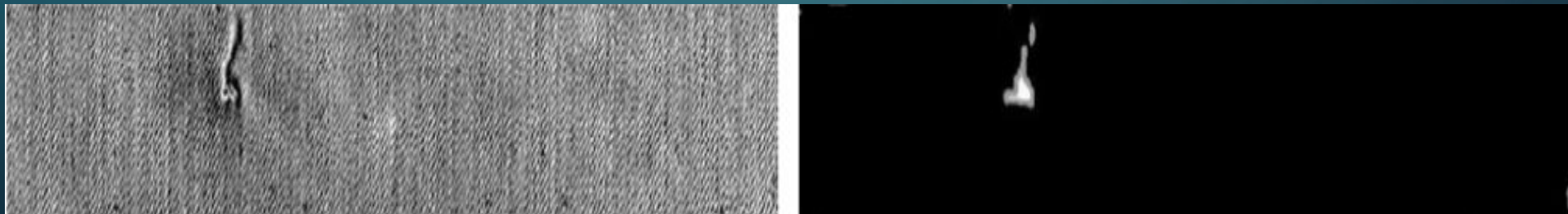
# HOLE:

A fabric imperfection in which one or several yarns are sufficiently damaged to create an opening.



# KNOT:

This type of fault is produced in woven fabrics when thread breaks during process of winding, warping, sizing or weaving



# TRADITIONAL DEFECT DETECTION:

The defects encountered within production must be detected and corrected at the early stages of the production process. Most defects arising in the production process of a fabric are still detected by human inspection. A woven fabric beam is placed on the fabric inspection machine and wound from the back to the front beam while passing over an illuminated surface. The quality control personnel has to scan nearly 2 meters width of fabric and must detect small details that can be located in a wide area that is moving through their visual field. The detection and classification of these defects are time consuming and tiring procedures. In the best case, a quality control person can detect no more than 60-70% of the present defects, and cannot deal with a fabric wider than 2 meters. It is observed that the inspection speed of a fabric woven with an efficiency of even 97% is 30 m/min, and only about 60% of the defects are detected.





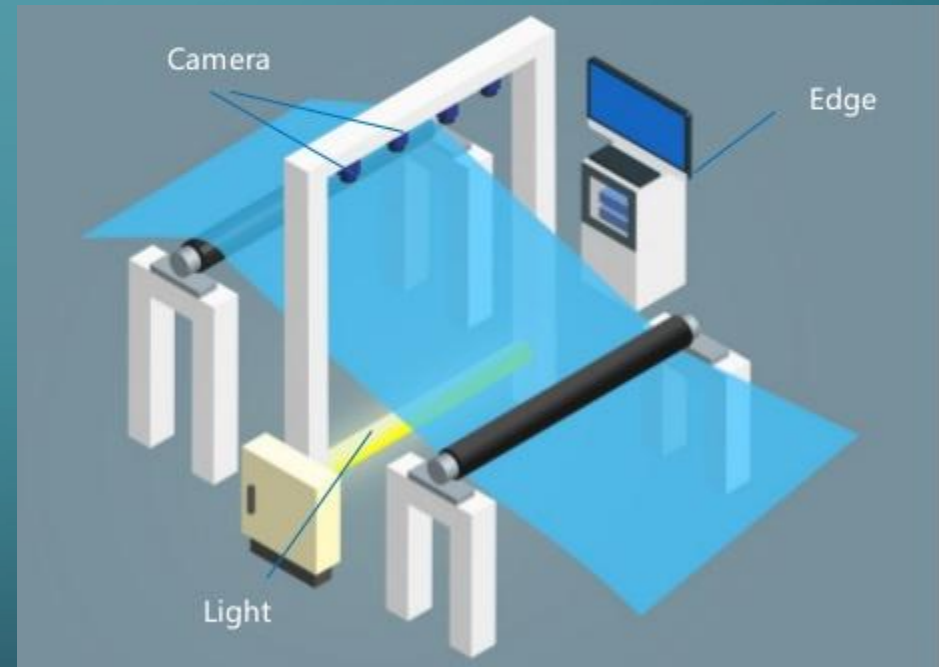
TRADITIONAL FABRIC INSPECTION:

# DRAW BACK S OF HUMAN INSPECTION

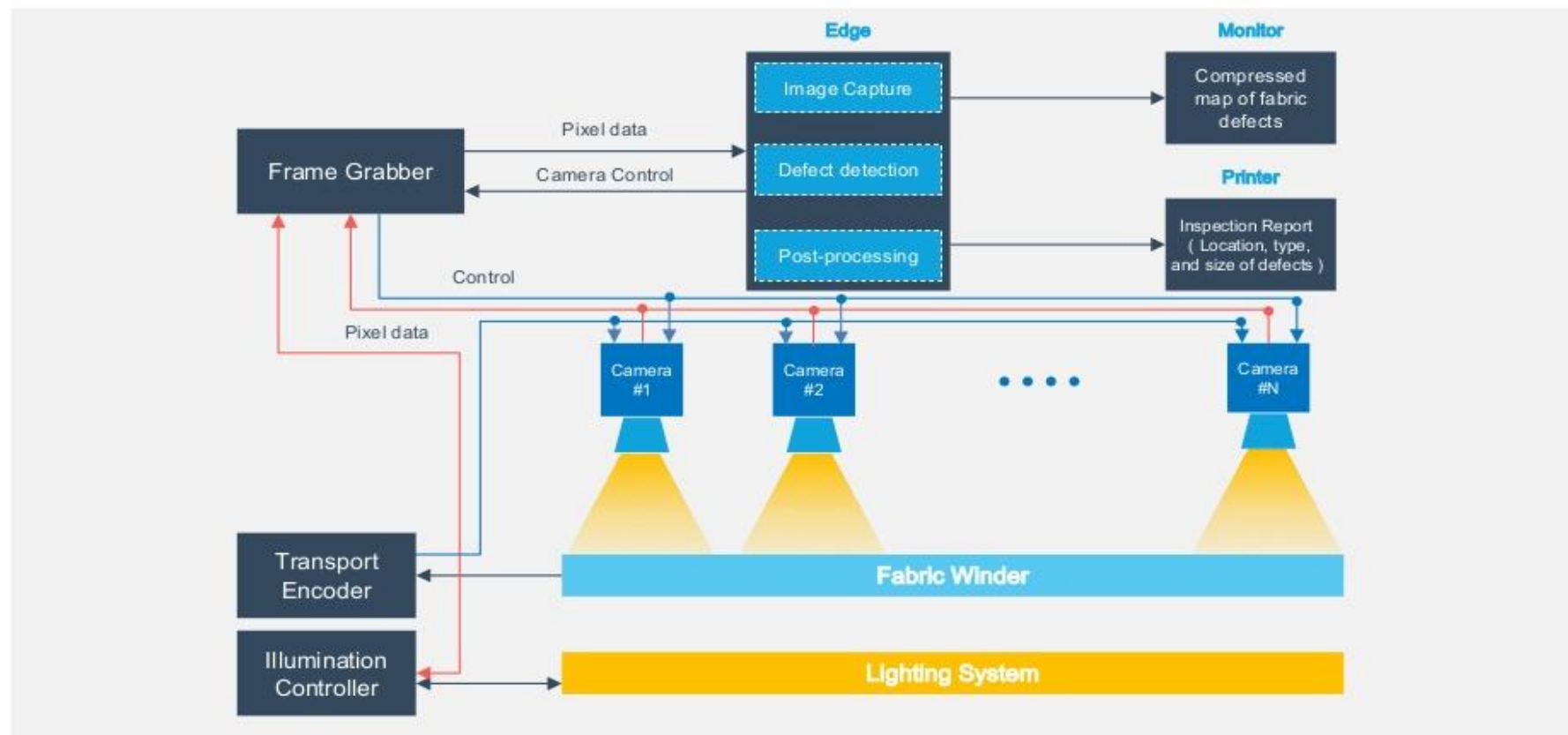
- Carelessness
- Optical Illusion
- Boredom
- Uncertain inspection due to Physical or mental stress

# WHAT WE ARE PROPOSING

A machine vision system  
for fabric Inspection



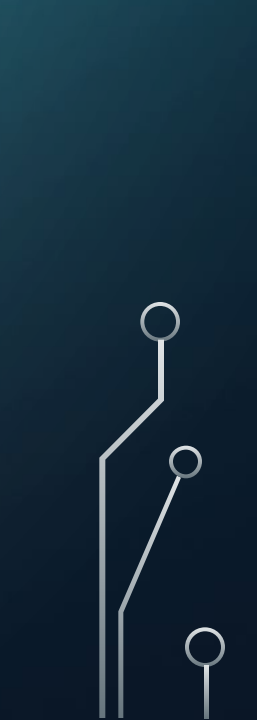










# WHY AI OVER HUMAN

- No human Error
  - Time
  - Performance efficient
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# FUTURE PLANS

- Exact location of defect
  - Enhancing features of software every month
  - Maintenance and data Record on one place
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