

*inspect 4.0*



# Textile defect detection by machine vision

Impulse SMART, 20230504

Gertrude Kignelman

**VLAIO**



Vlaanderen  
is ondernemen

 **InViLab**



# bridge

- InViLab



- Machine vision & Machine Learning
- Project coordination

- Centexbel

- Textiles with defects
- Project management
- Connection between textile and machine vision companies



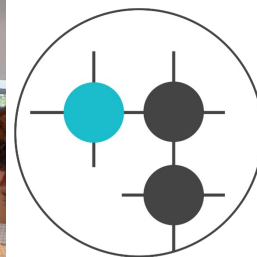
CREATE

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Machine vision companies



CONNECT

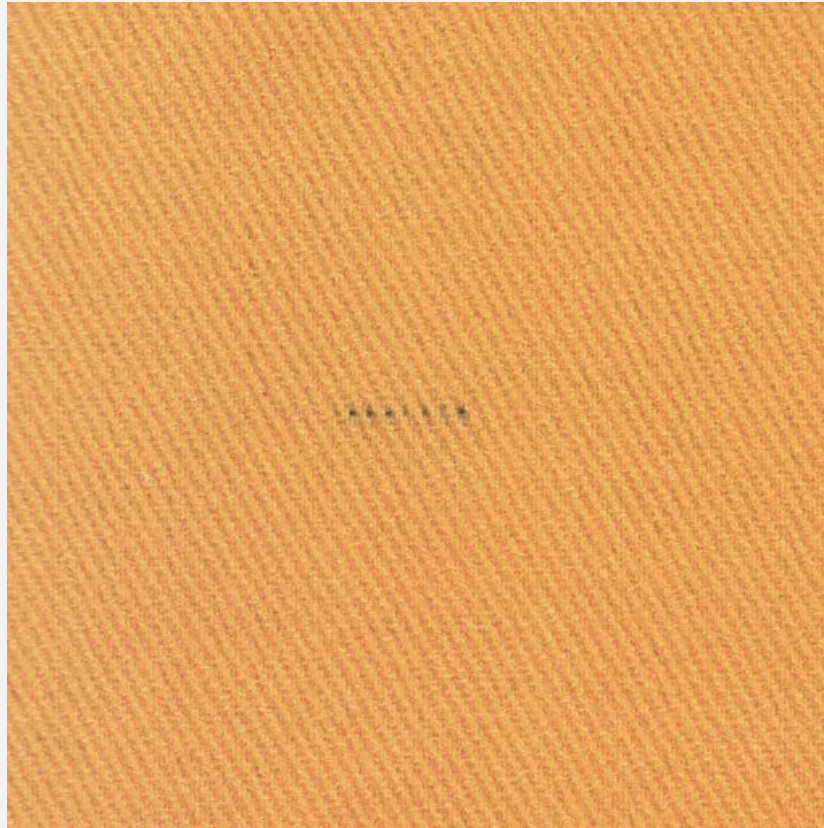
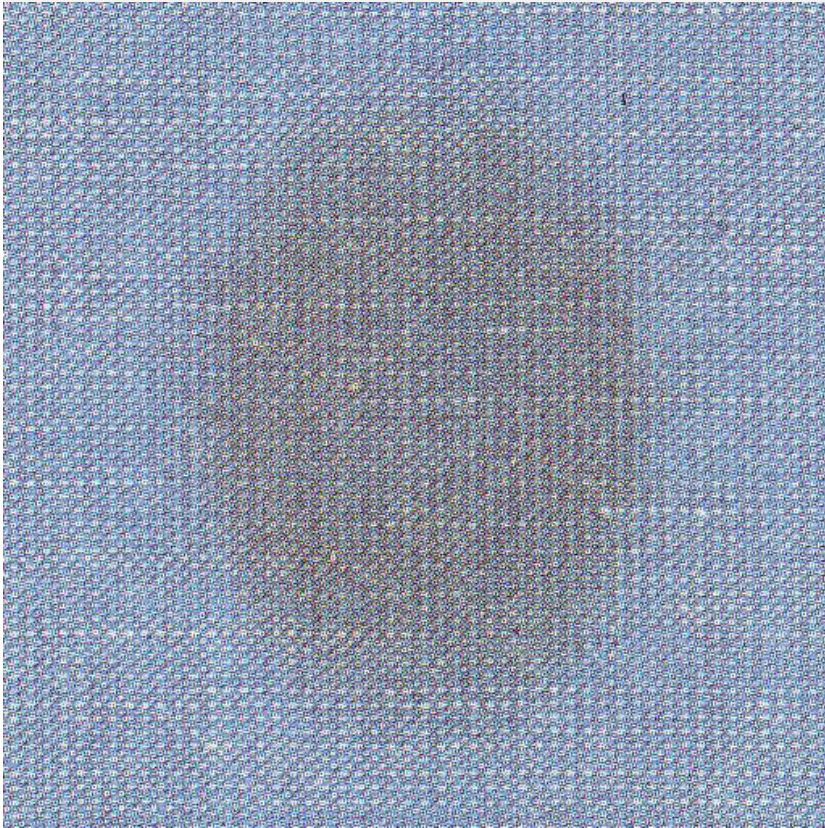


Textile industry

# Textile defects: where is the defect ?



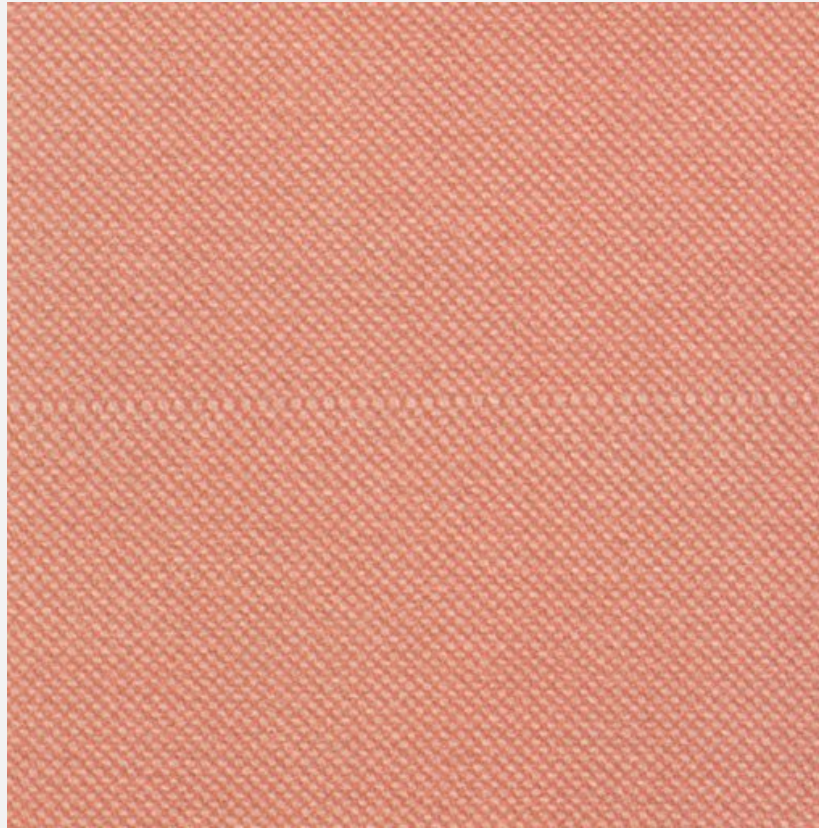
# Textile defects: what type of defect is it ?



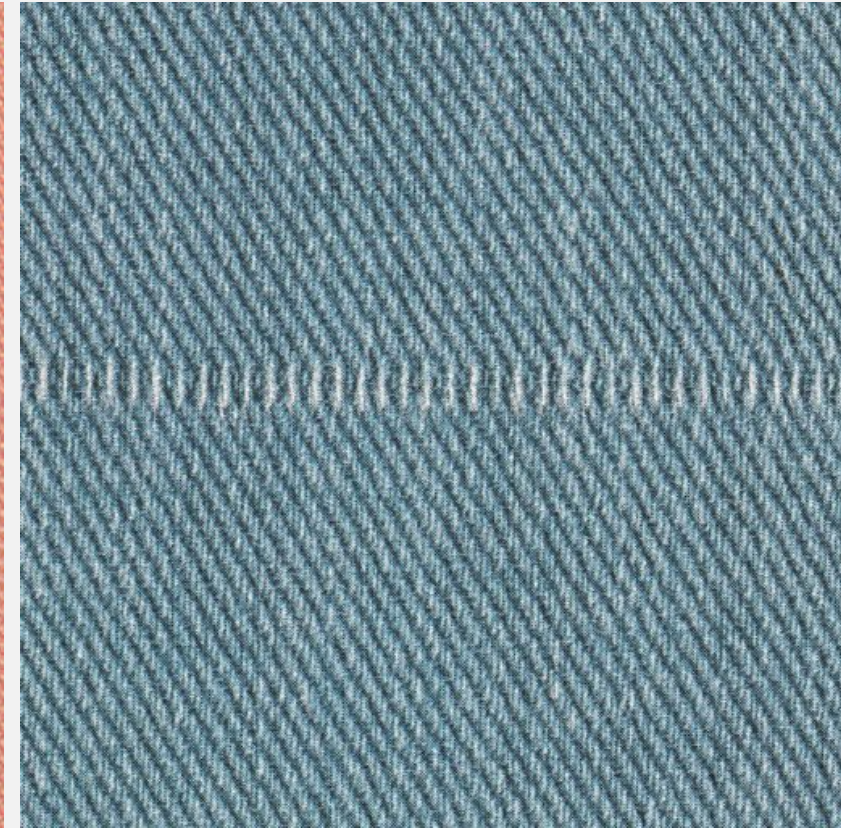
# Textile defects: same defects, different woven fabric types



Plain weave

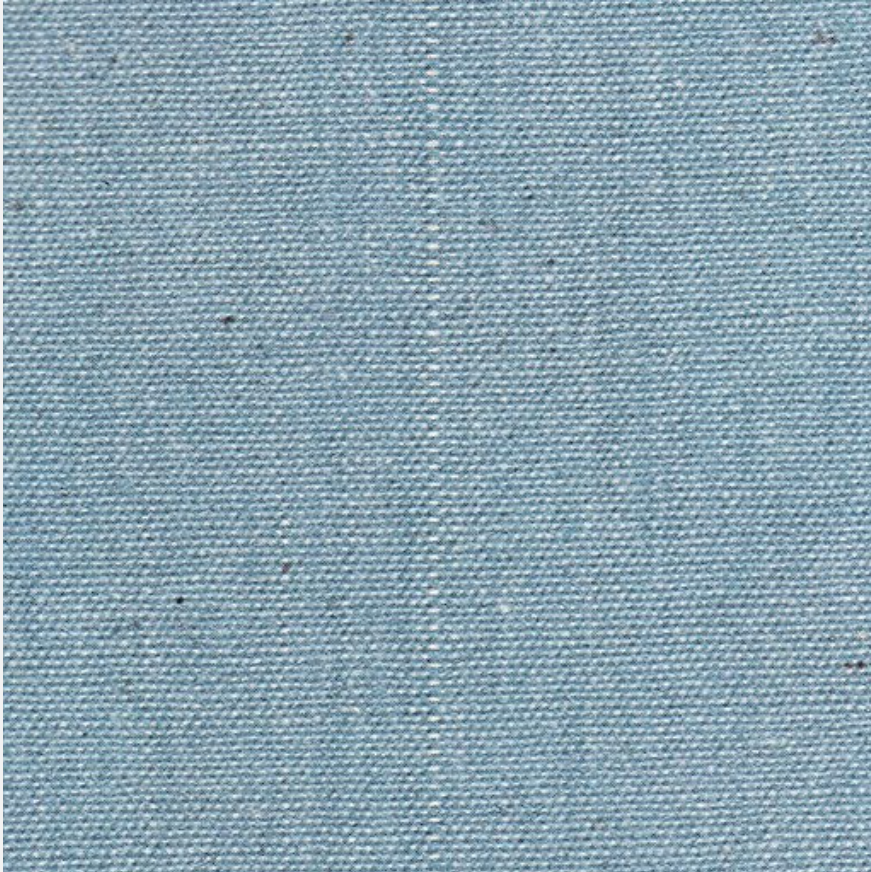


Plain weave



Denim

# Textile defects: same defect; minor for one fabric type, major for the other



Double end in Chambray



Double end in Twill

# Textile inspection: trained eye required!

## On-line and postproduction

- **Human operator on illuminated tables**
  - Postproduction inspection
  - Identify defects
  - Repair when possible





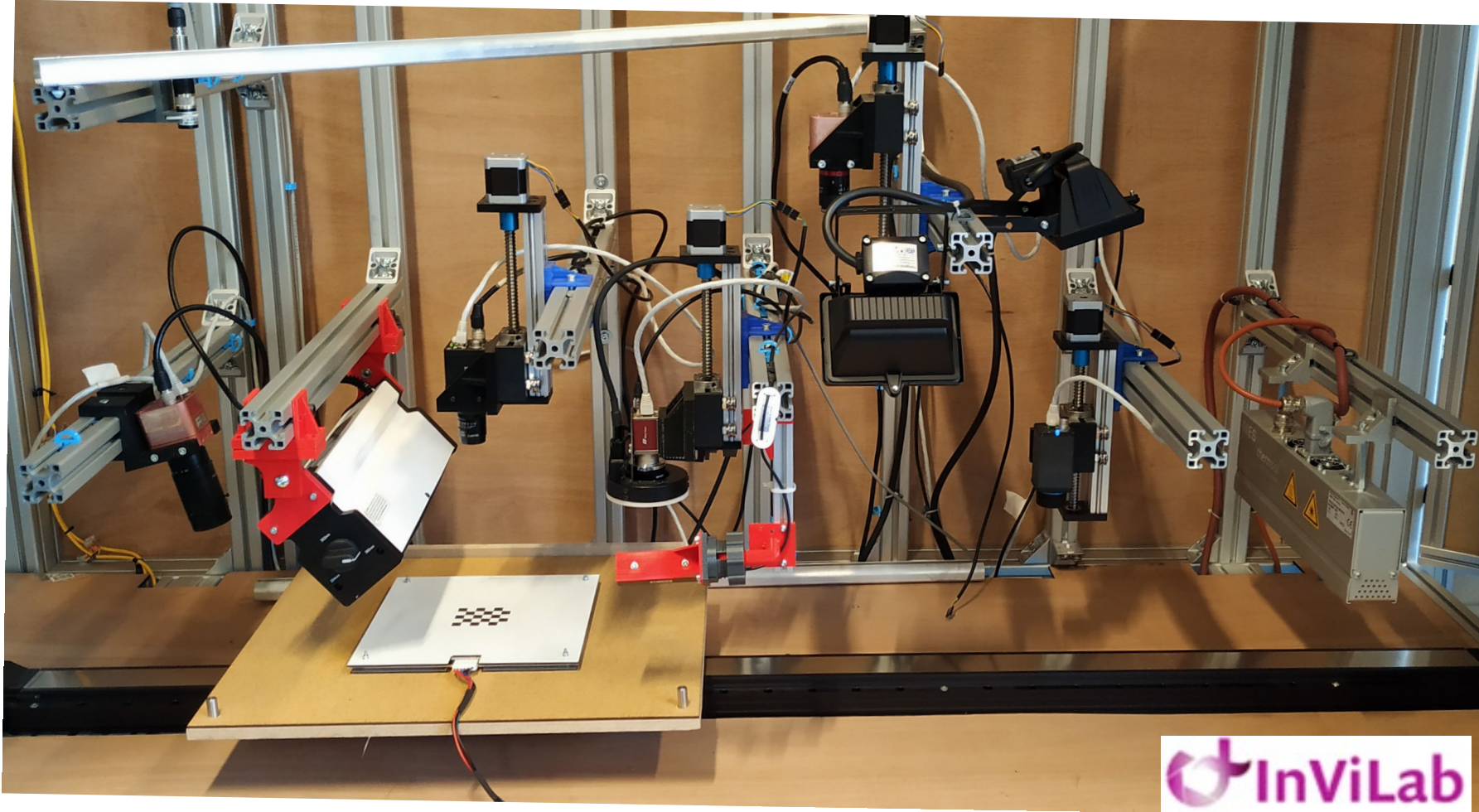
# Textile inspection: Trained eye required! But...

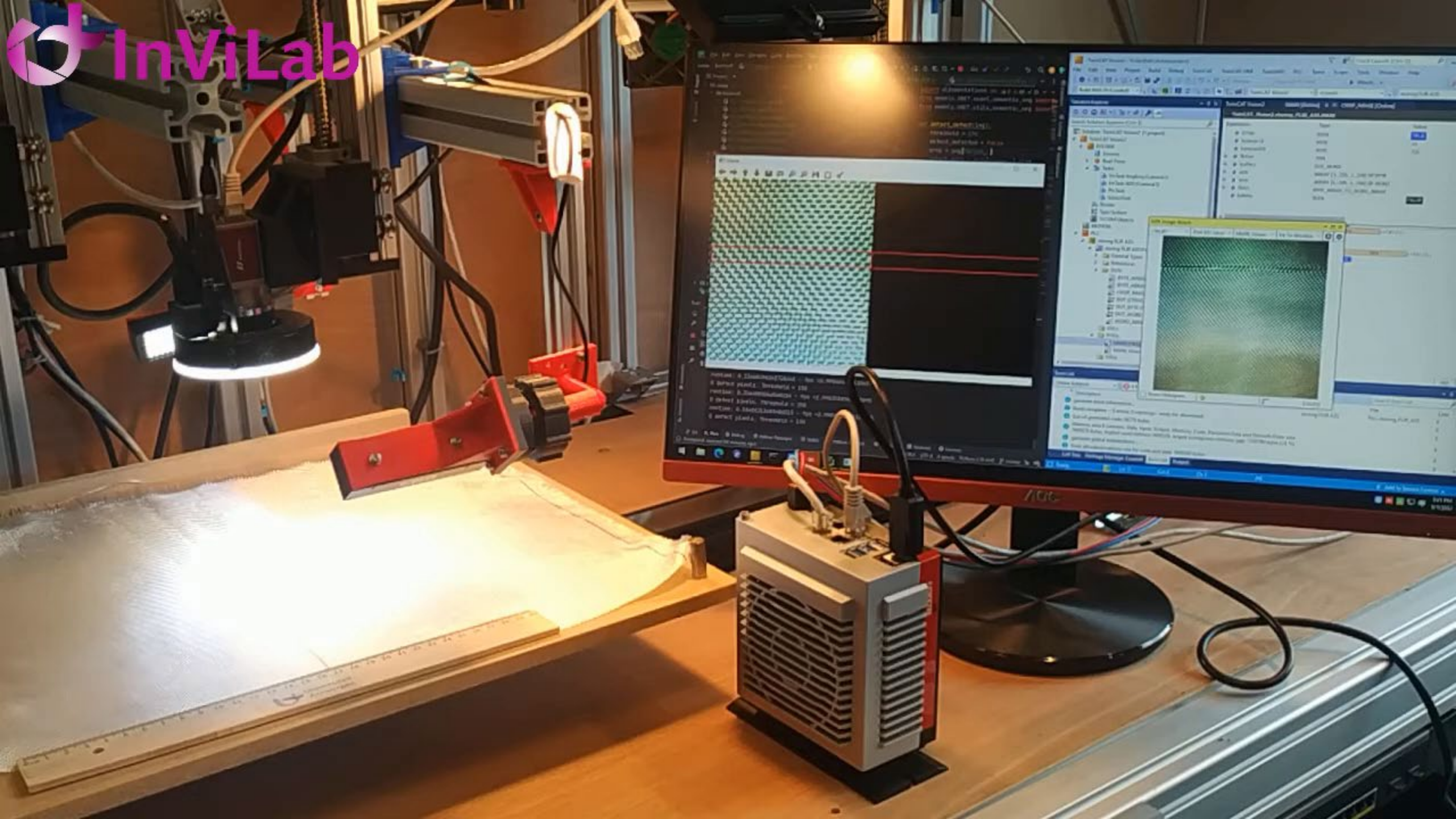
- Special training
- Human errors
  - Repeated inspection by different operators
- Time
- Labor shortages



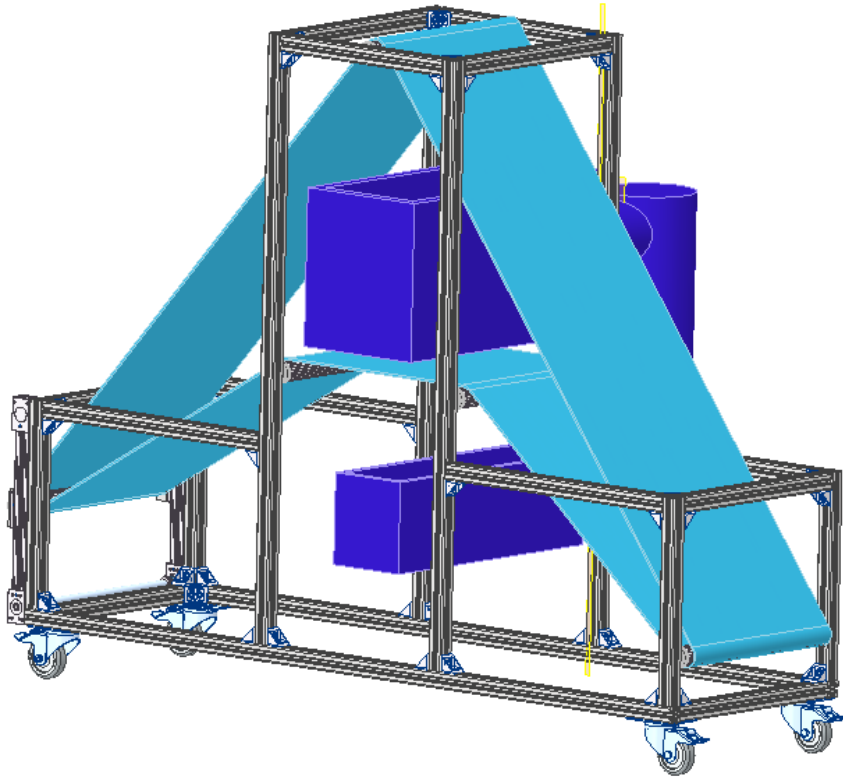
**Machine vision to ~~replace~~ assist human operators**

# Identify the suitable wavelength to see defects in one scan with MuSIC





# Demonstrator



## Closed-loop inspection system:

- Demo sample:
  - Length: 6 m
  - Width: 40-45 cm
- Speed: 2 m/s

# *inspect 4.0*

Verbetering van kwaliteitsinspectie in de  
textielindustrie met behulp van visietechnologie

[centexbelpresents.be/en/inspect4-0](http://centexbelpresents.be/en/inspect4-0)



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