FlawML

Why?

- Automation in NDT provides
  - Better repeatability and consistency
  - Better use of human resources
  - More reliable performance evaluation

- Machine learning in automation provides
  - Human-level performance
  - Automation of challenging inspections

Why now, why Trueflaw

- The fundamentals are good enough
  - Deep learning models are capable
  - Computational burden is manageable

- Trueflaw knows cracks
  - Cracks and cracked samples are needed for training
  - eFlaw data augmentation to train sophisticated models

- Trueflaw knows POD
  - New technology like machine learning needs careful validation
  - POD is the gold standard for NDT reliability estimation

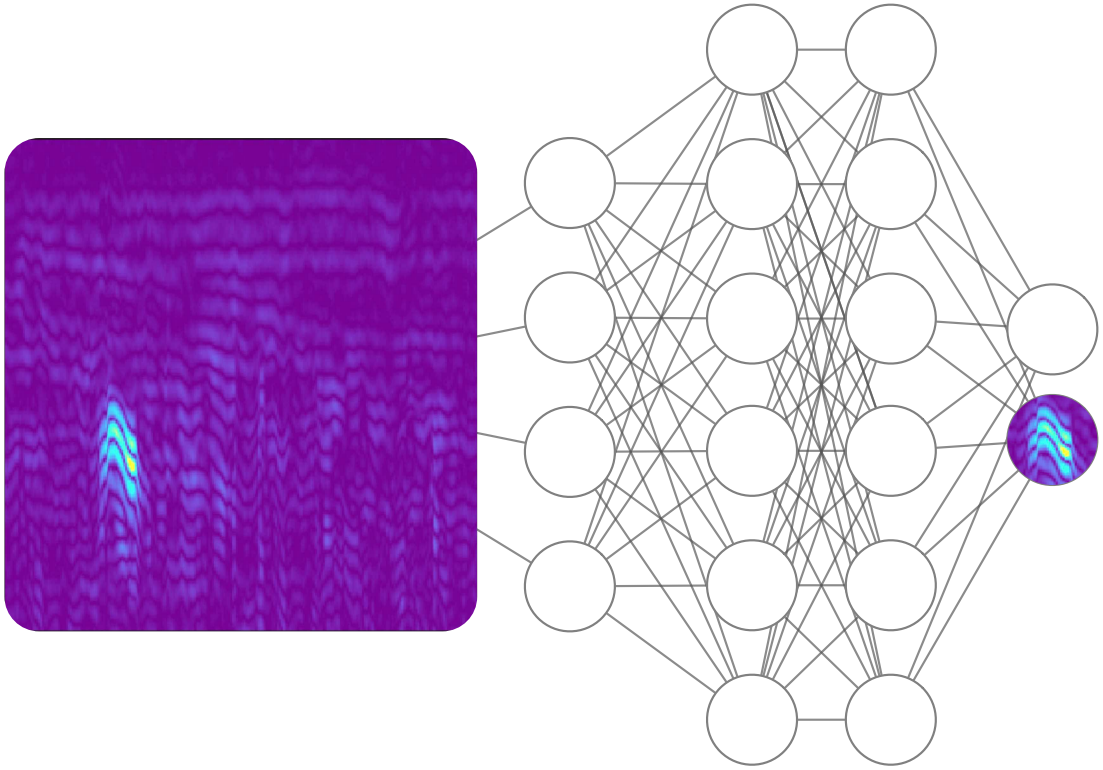
The Trueflaw advantage

- Better data
  - Trueflaw can make cracks to get more representative data
  - Trueflaw has developed sophisticated eFlaw data-augmentation to train modern networks on NDT data. eFlaw is used & validated in training and qualifying humans in the nuclear industry
- Better validation
  - Trueflaw does ASTM-E2862 POD evaluations for space and aerospace industry – the gold standard of NDT reliability
  - Trueflaw models are validated using similar POD procedure

Machine learning is here

- Trueflaw has developed ML systems that achieve human performance
- Modern deep learning network
- Trueflaw developed data augmentation
- Validation using industry standard POD

Ultrasonic inspection



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To aid the inspector

- Analyzing copious data takes time and is error-prone
- Automated ML analysis highlights potential flawed locations
- Inspector can focus his time where it counts

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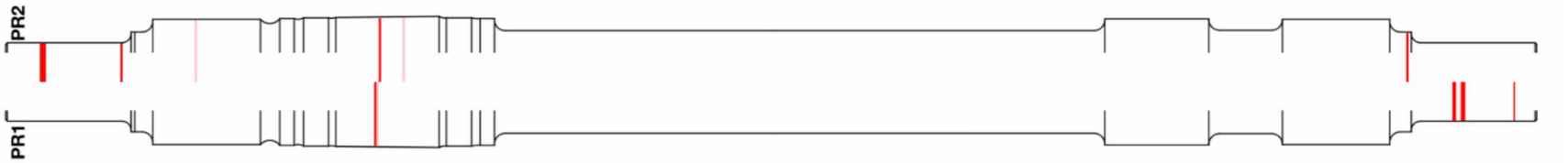
Easy to read report



- Complete PDF report
- Indications clearly marked and easy to use
- Detailed location for manual verification

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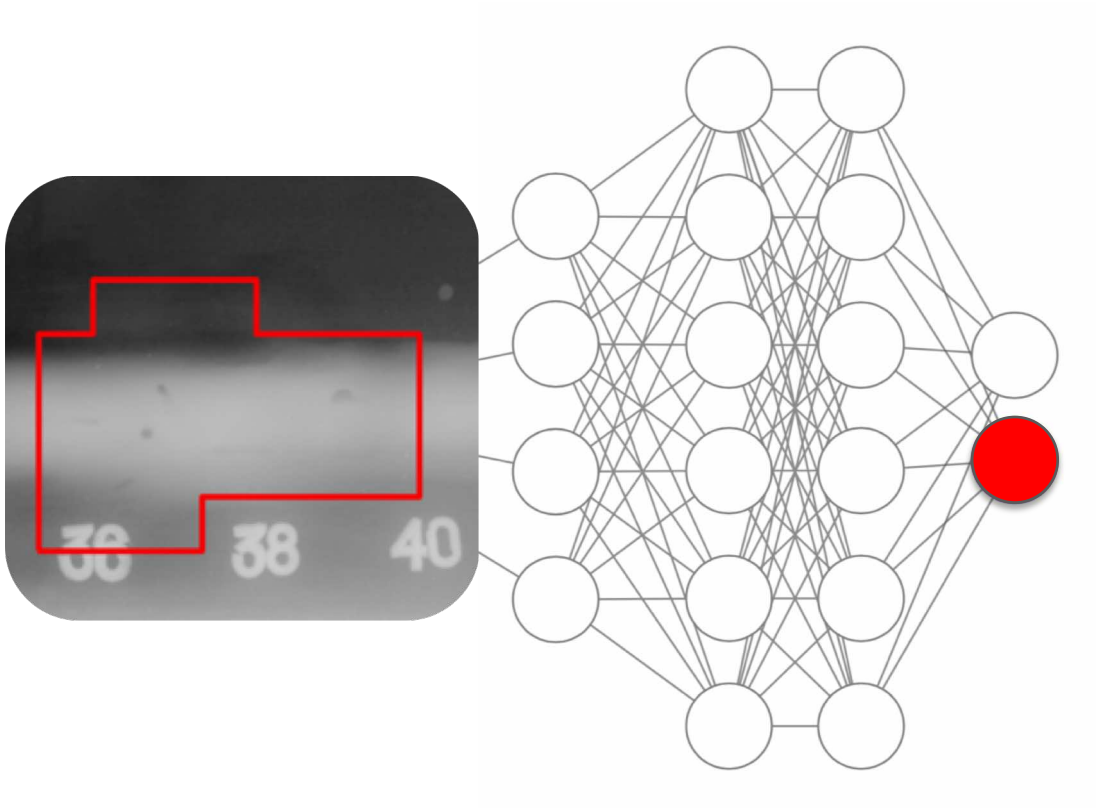
UT current status

- First models delivered and used in the field
- Numerous projects on-going for various applications

Digital X-ray



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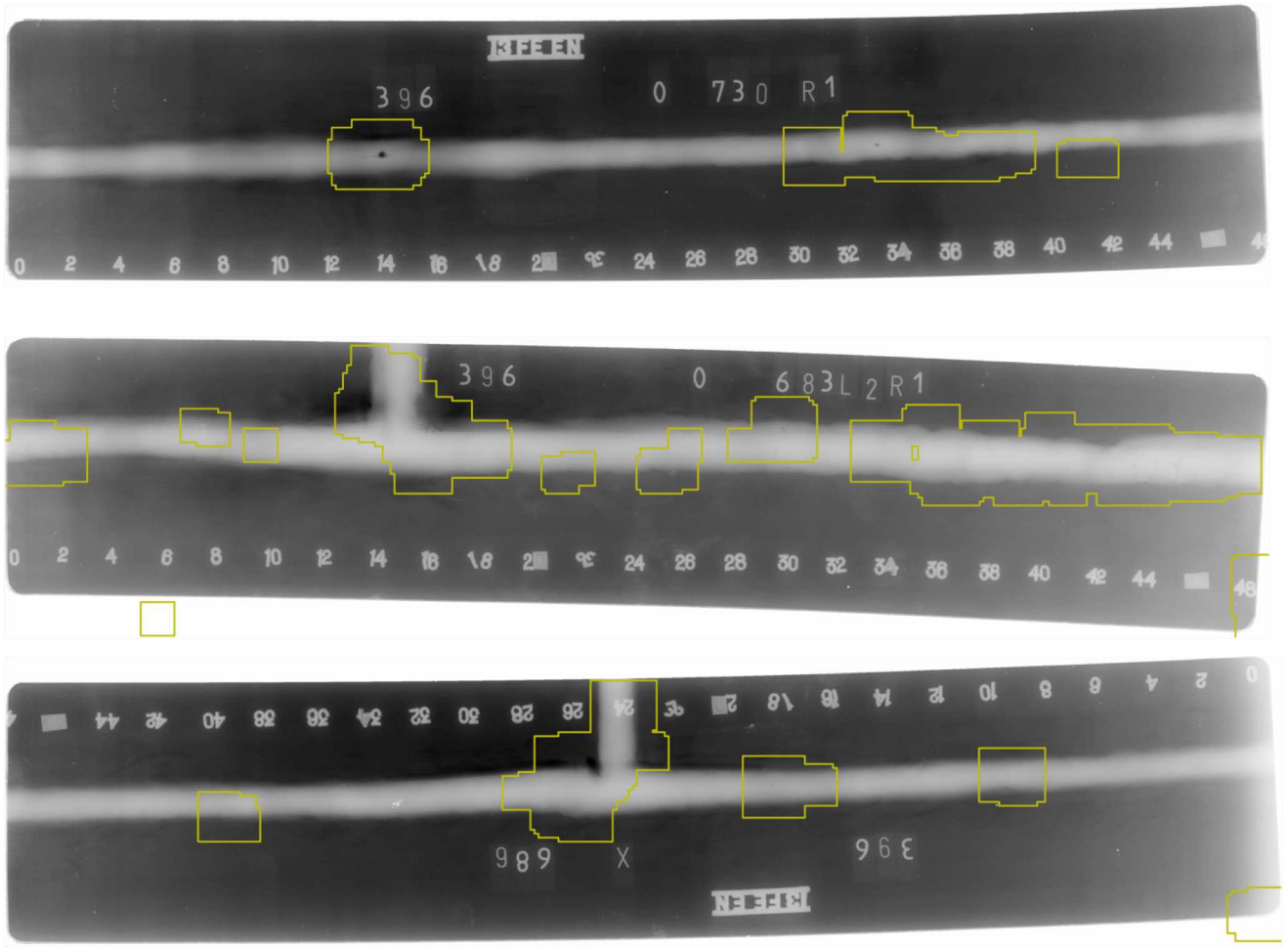
Trained FlawML indications



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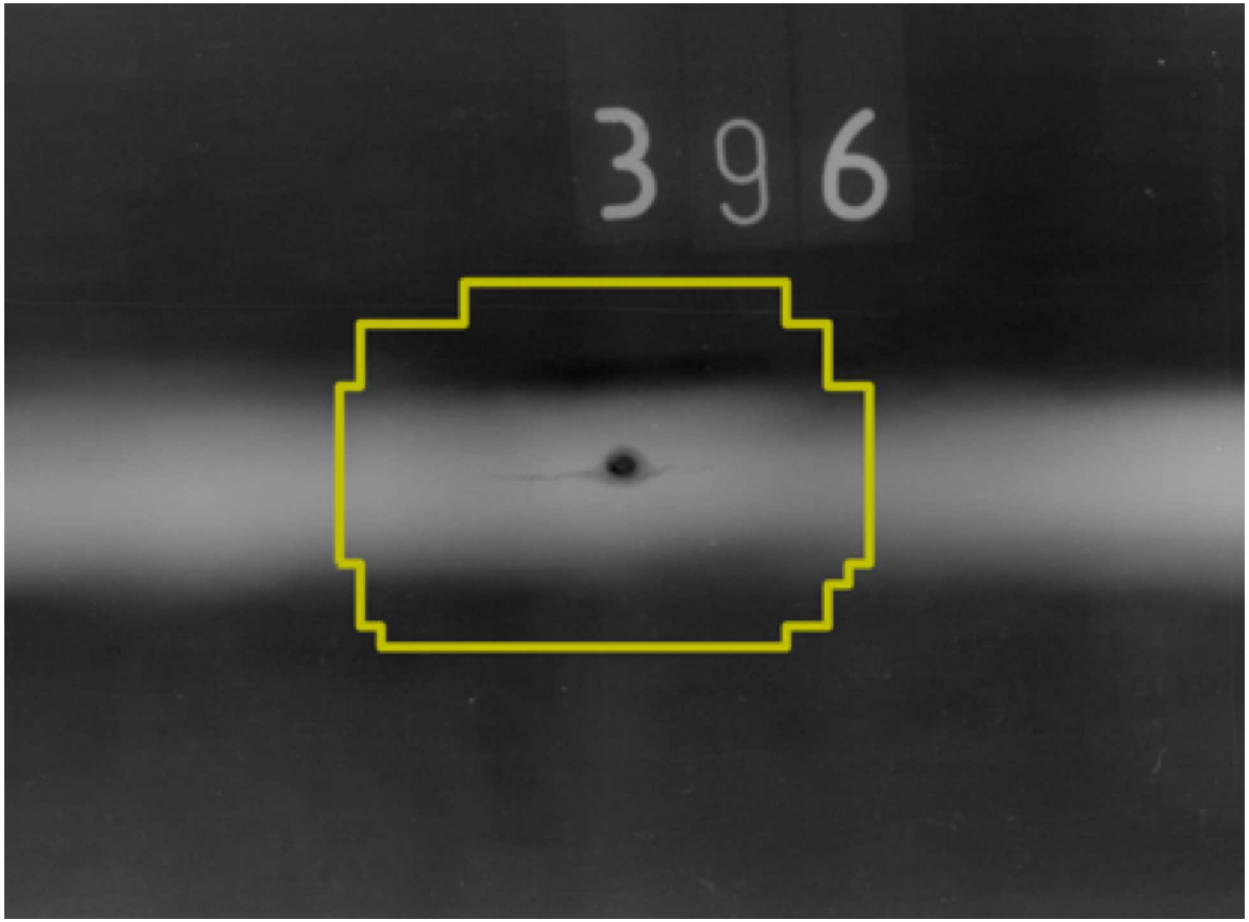
Trained FlawML indications



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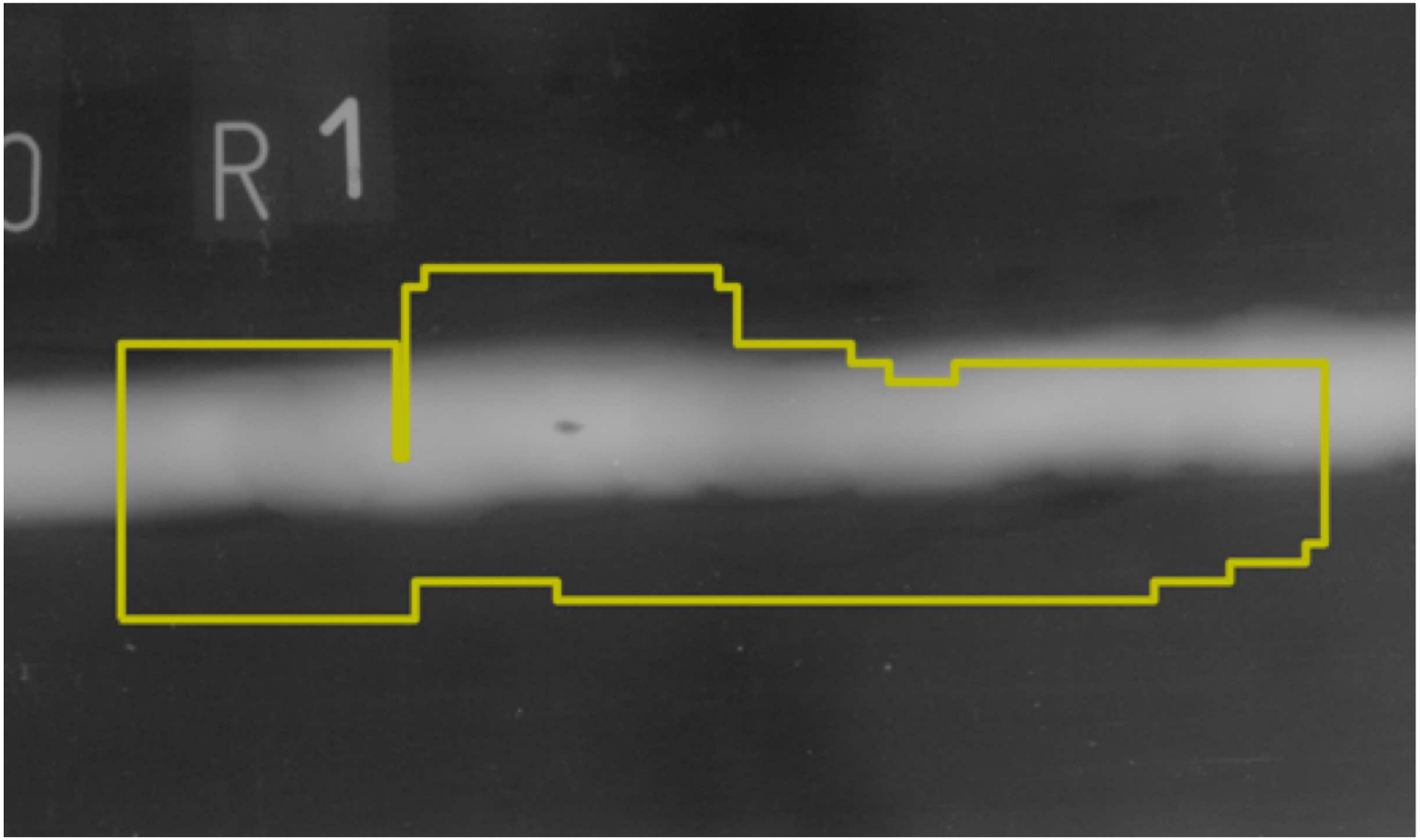
Trained FlawML indications



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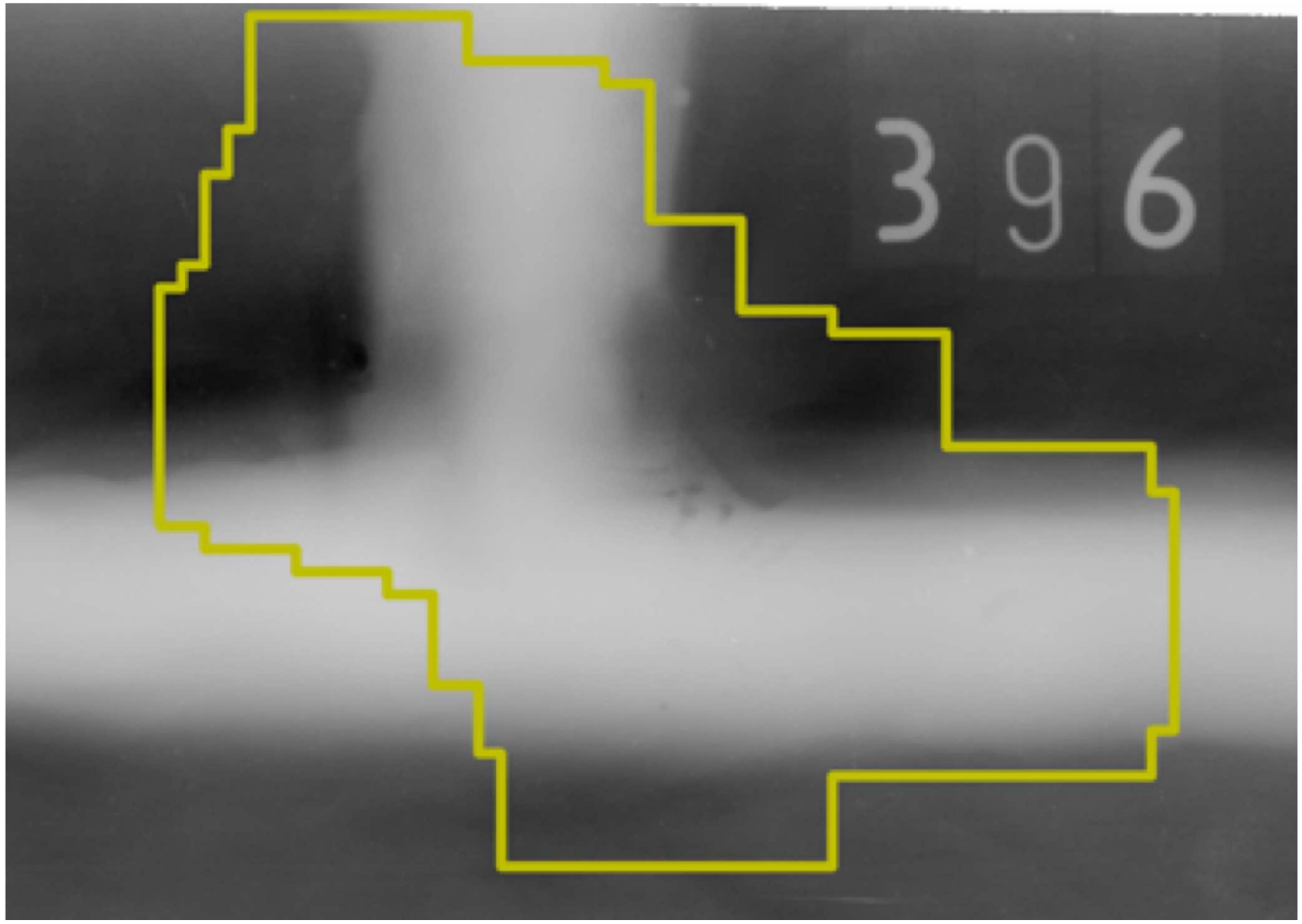
Trained FlawML indications



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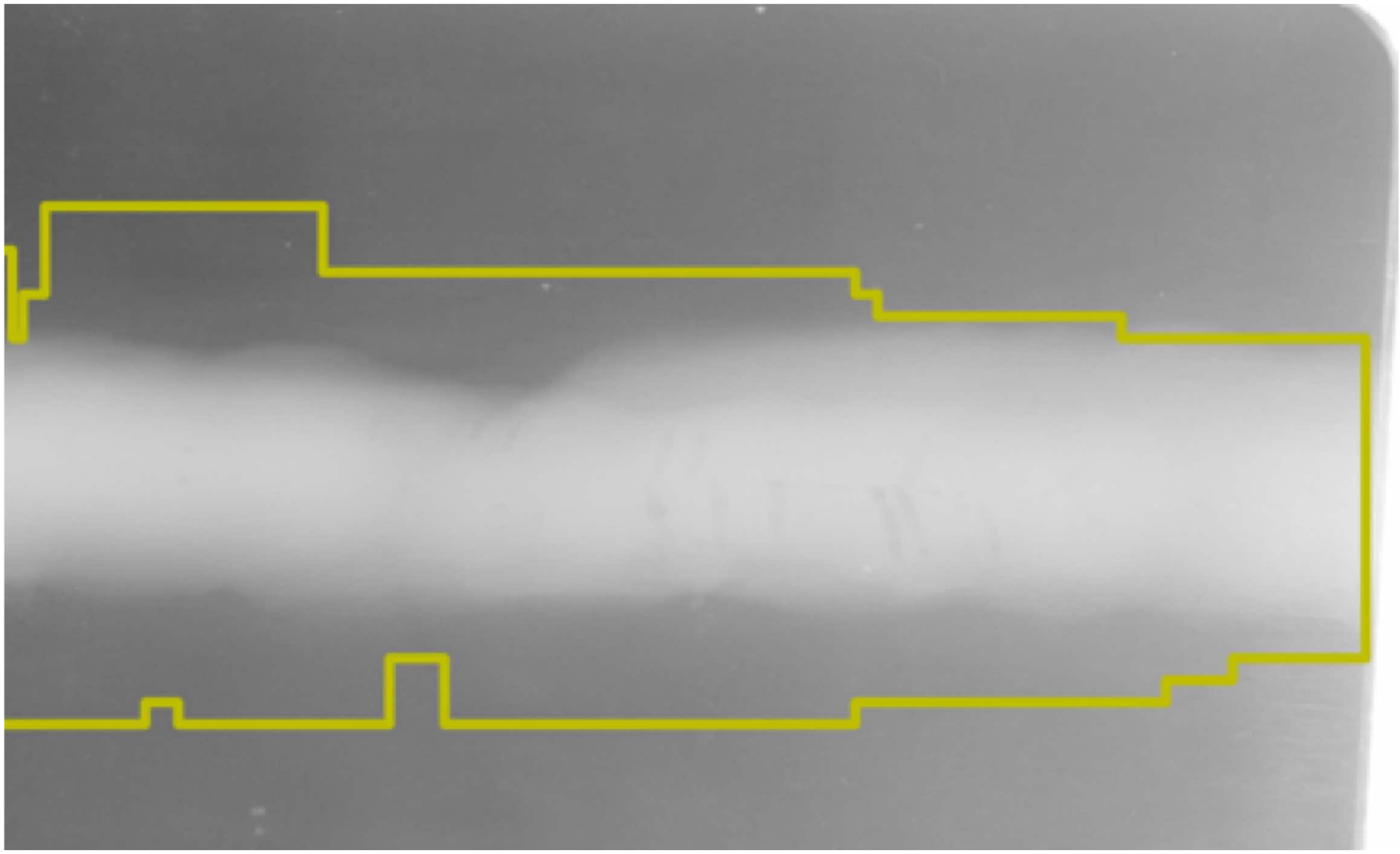
Trained FlawML indications



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X-ray current status

- Model accuracy sufficient (>98%, no misses)
- First client delivery to be completed shortly

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