

1. (Frontend)

- [illegible]

- (PDF Excel)

(Backend)

- [illegible]

3.

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- YOLOv8

- (FPN)

- EfficientNetB0

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1.

- : React.js
- : Material-UI Tailwind CSS
- : i18next
- : Formik Yup
- : Redux Context API
- : React Image Viewer
- : Chart.js D3.js

2.

- : Node.js Express Python FastAPI
- : MongoDB PostgreSQL
- : JWT (JSON Web Tokens)
- : Multer (Node.js) FastAPI File Upload
- **API:** RESTful API GraphQL
- : Swagger OpenAPI

3.

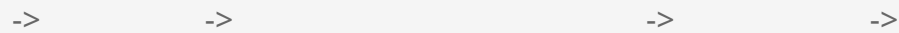
- : PyTorch TensorFlow

- : YOLOv8
- : OpenCV
- :
- : TensorFlow Serving ONNX Runtime TorchServe

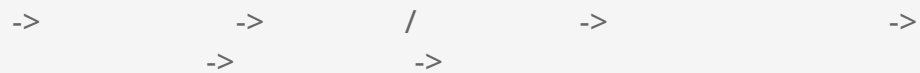
4.

- : Docker Kubernetes
- : AWS Google Cloud Azure
- **CI/CD**: GitHub Actions GitLab CI
- : Prometheus Grafana
- : Amazon S3 Google Cloud Storage

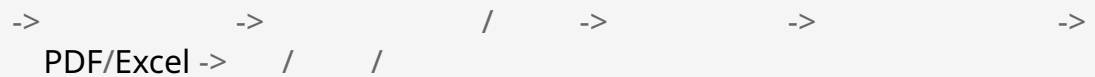
1.



2.



3.



1. (Users)

- (user_id)
- (username)
- (email)
- (password_hash)

- (full_name)
- (user_type):
- (created_at)
- (last_login)

2. (Projects)

- (project_id)
- (project_name)
- (description)
- (owner_id)
- (created_at)
- (updated_at)
- (status)

3. (Images)

- (image_id)
- (project_id)
- (uploader_id)
- (image_path)
- (image_name)
- (upload_date)
- (processing_status)
- (metadata):

4. (Defects)

- (defect_id)
- (image_id)
- (defect_type):
- (location):
- (severity)
- / (area/size)
- (confidence)
- (detection_date)

5. (Reports)

- (report_id)
- (project_id)
- (creator_id)

- (title)
- (description)
- (created_at)
- (report_path)
- (report_type)

1.

2. JWT

3. bcrypt

4. (2FA)

5.

6.

7. HTTPS

8.

9. (RBAC)

10. API

11.

12. SQL

13. XSS

14. CSRF

15. (Rate Limiting)

1. :

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10. :

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13. (API)

14. :

15.

16. YOLOv8

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