CSS 426 ML Ops

Lab - 2

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- Roll No. 2022BCD0046

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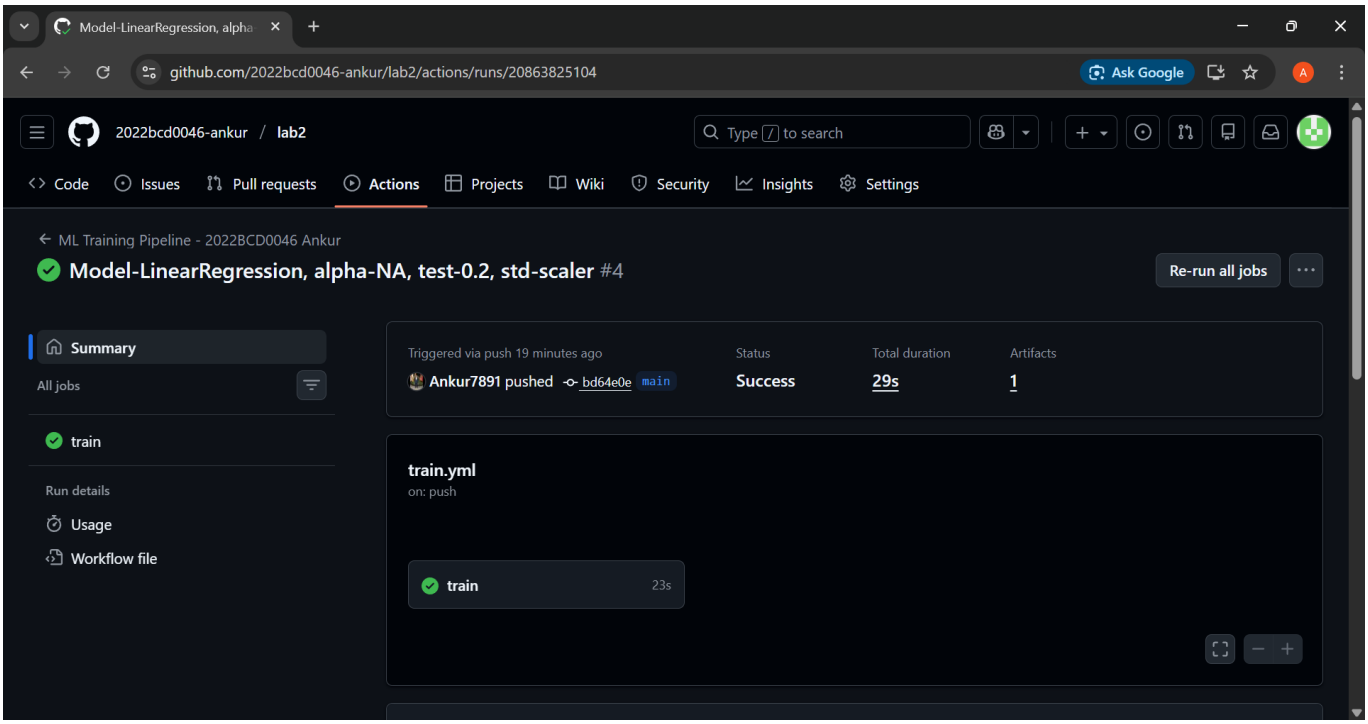
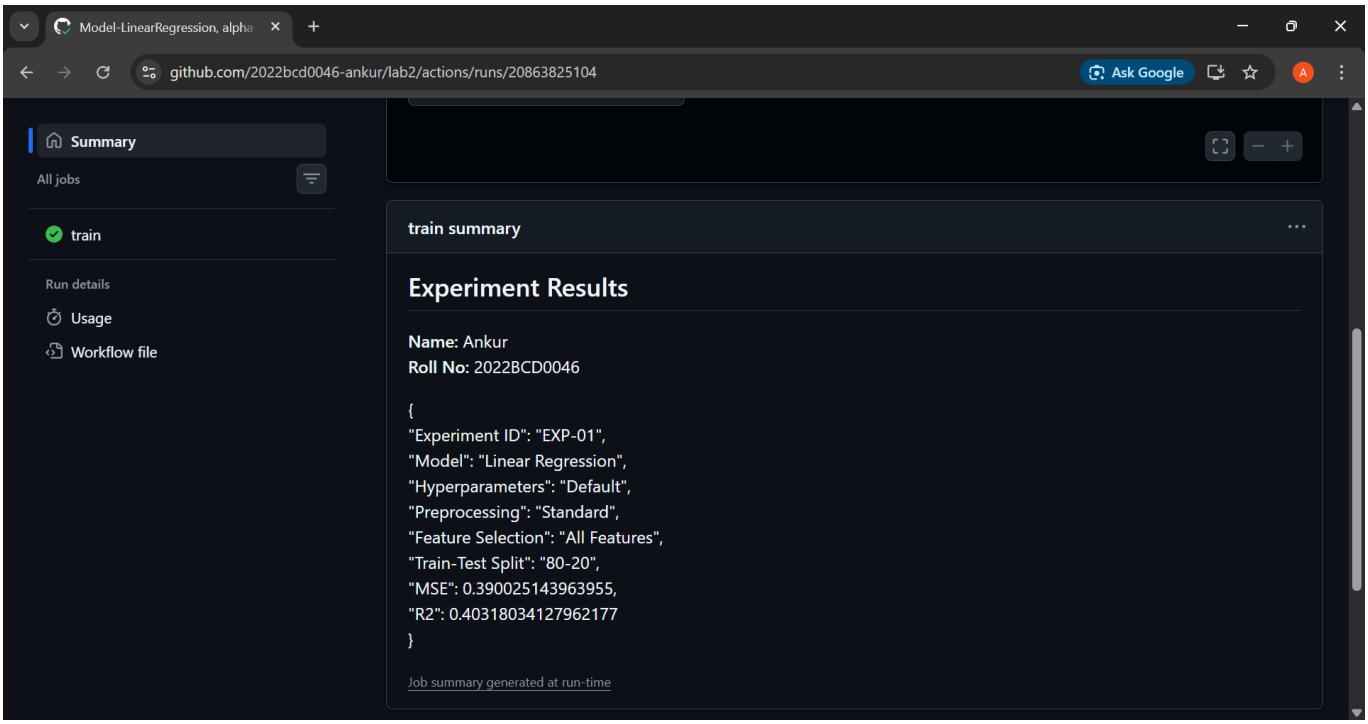
1. GitHub Repository Link

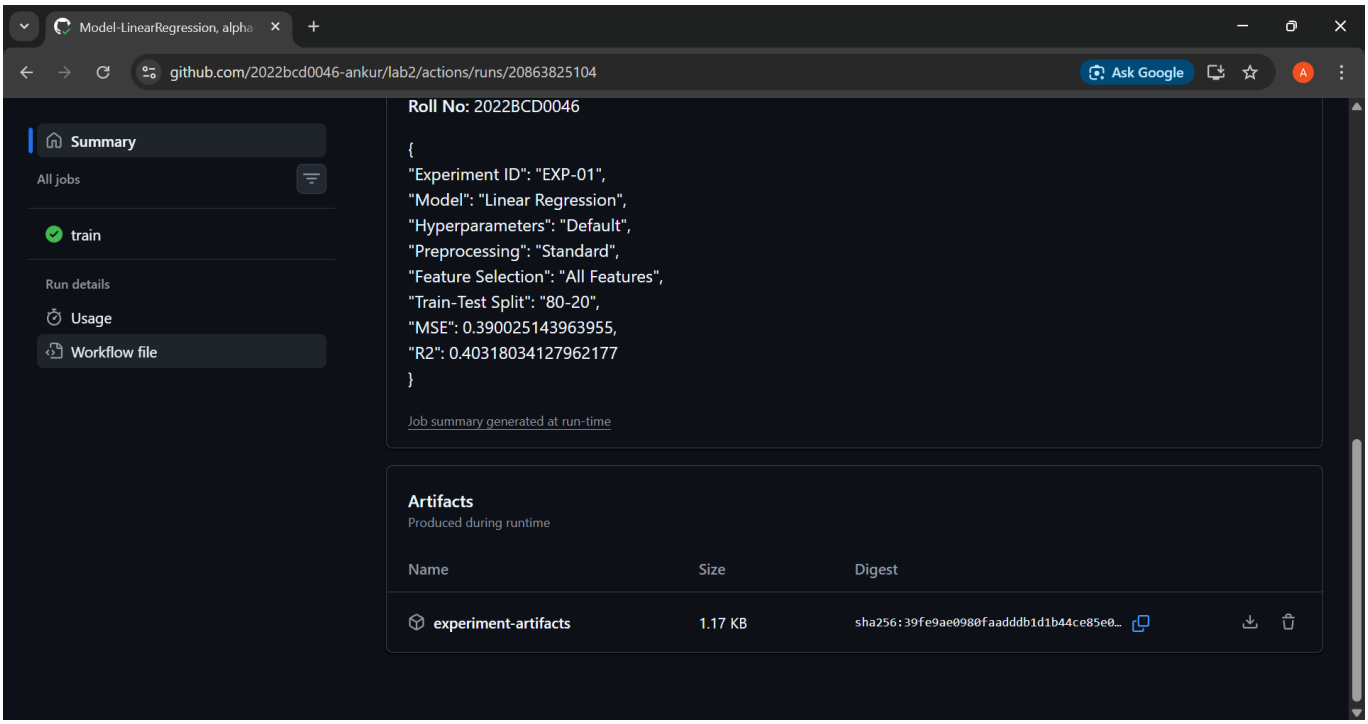
- github.com/2022BCD0046-ankur/lab2

2. Screenshots of Job Summary and Artifacts

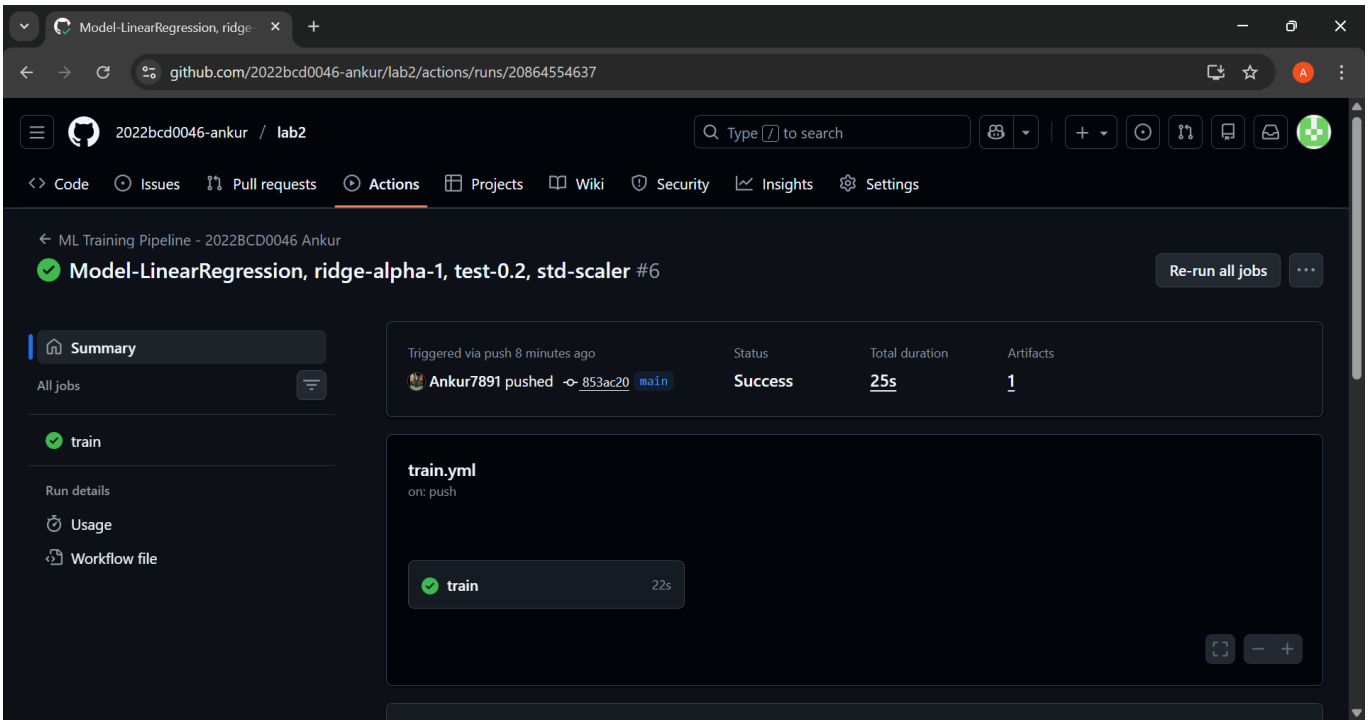
- EXP-01: Run Link

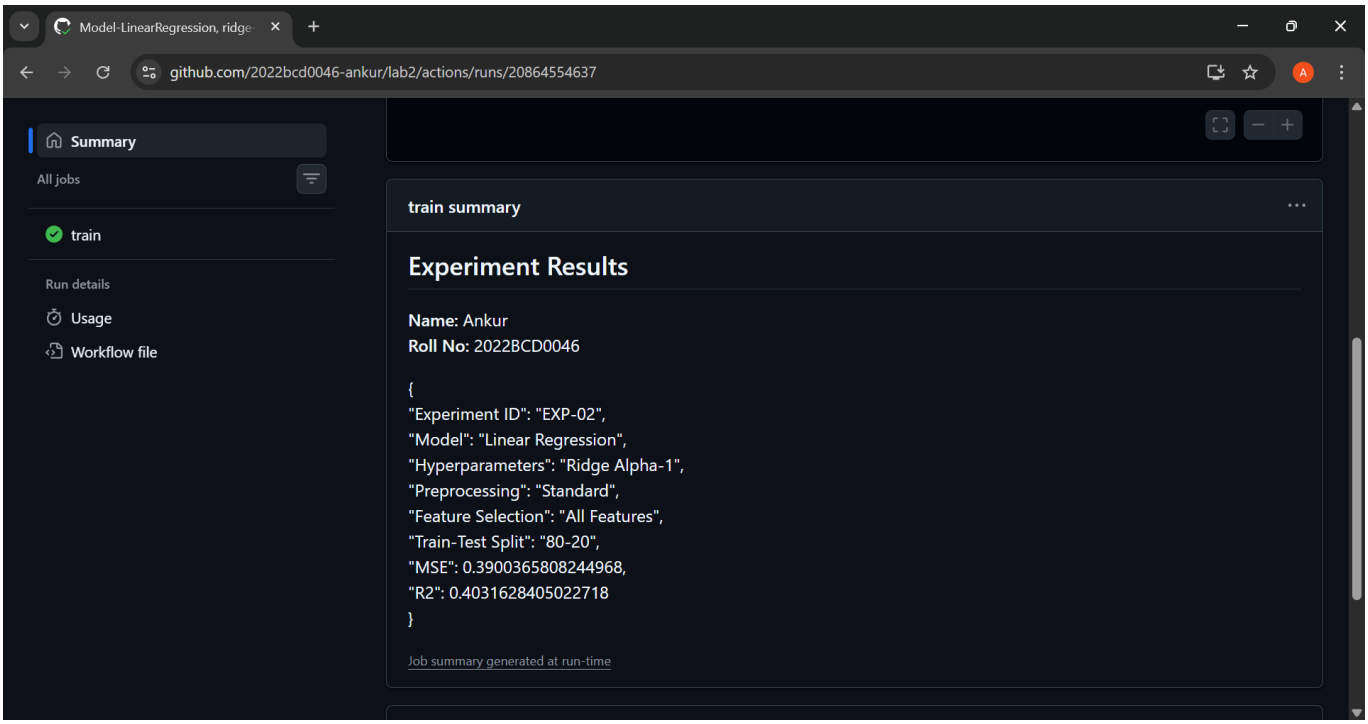

Model-LinearRegression, alpha
github.com/2022bcd0046-ankur/lab2/actions/runs/20863825104
Ask Google
2022bcd0046-ankur / lab2
Type / to search
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
ML Training Pipeline - 2022BCD0046 Ankur
Model-LinearRegression, alpha-NA, test-0.2, std-scaler #4
Re-run all jobs
Summary
All jobs
train
Run details
Usage
Workflow file
Triggered via push 19 minutes ago
Ankur7891 pushed bd64e0e main
Status
Success
Total duration
29s
Artifacts
1
train.yml
on: push
train 23s

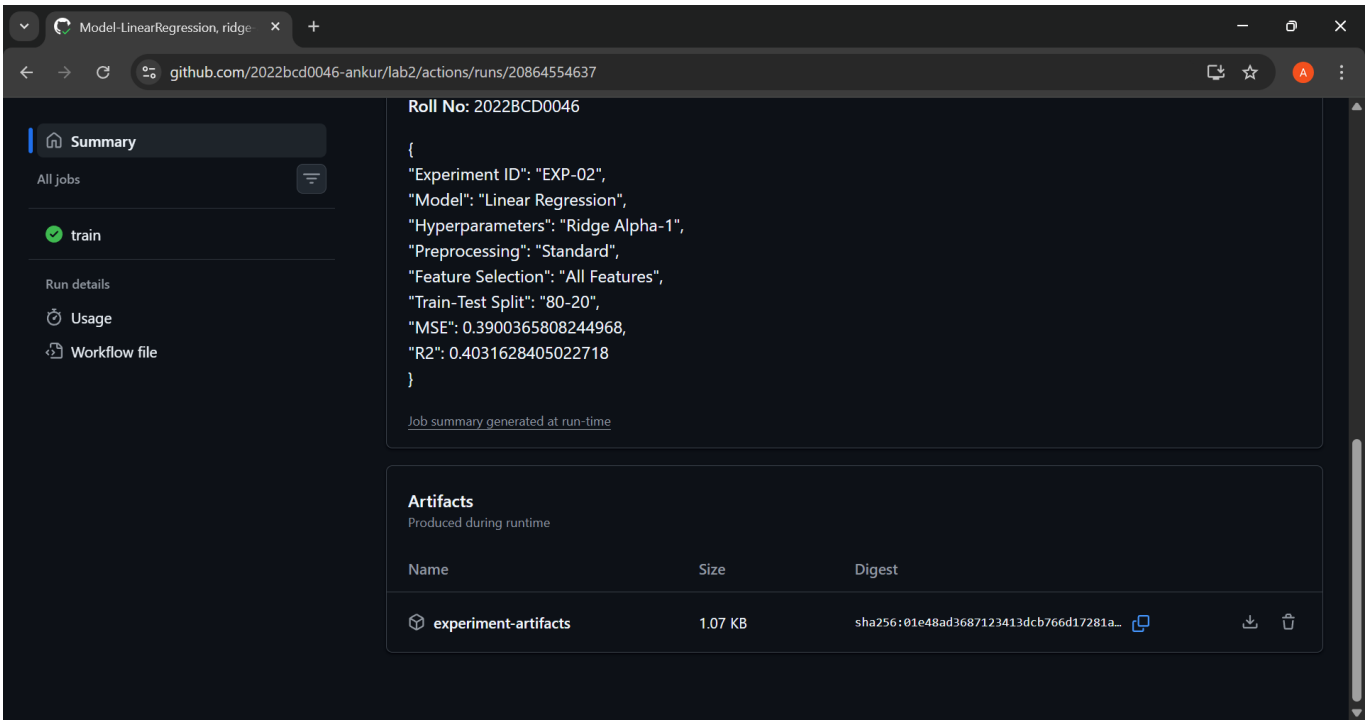

Model-LinearRegression, alpha
github.com/2022bcd0046-ankur/lab2/actions/runs/20863825104
Ask Google
Summary
All jobs
train
Run details
Usage
Workflow file
train summary
Experiment Results
Name: Ankur
Roll No: 2022BCD0046
{
"Experiment ID": "EXP-01",
"Model": "Linear Regression",
"Hyperparameters": "Default",
"Preprocessing": "Standard",
"Feature Selection": "All Features",
"Train-Test Split": "80-20",
"MSE": 0.390025143963955,
"R2": 0.40318034127962177
}
Job summary generated at run-time



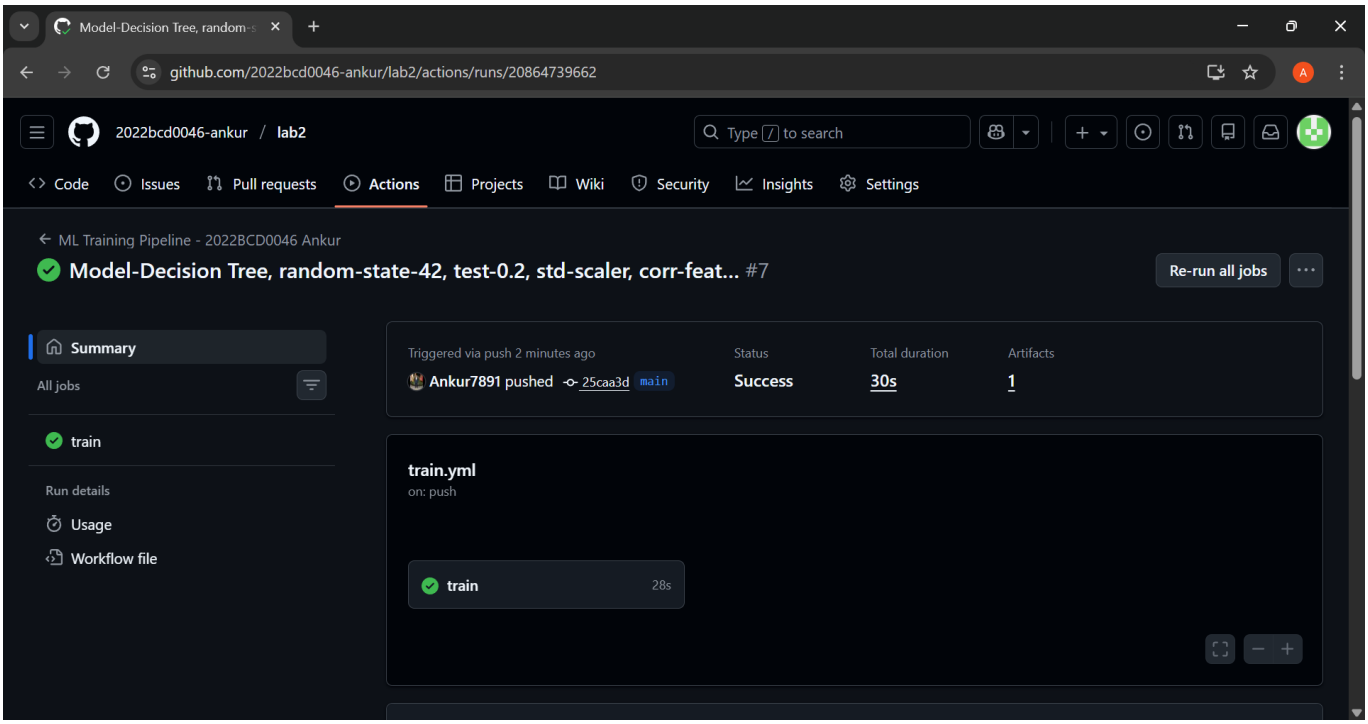
- EXP-02: Run Link

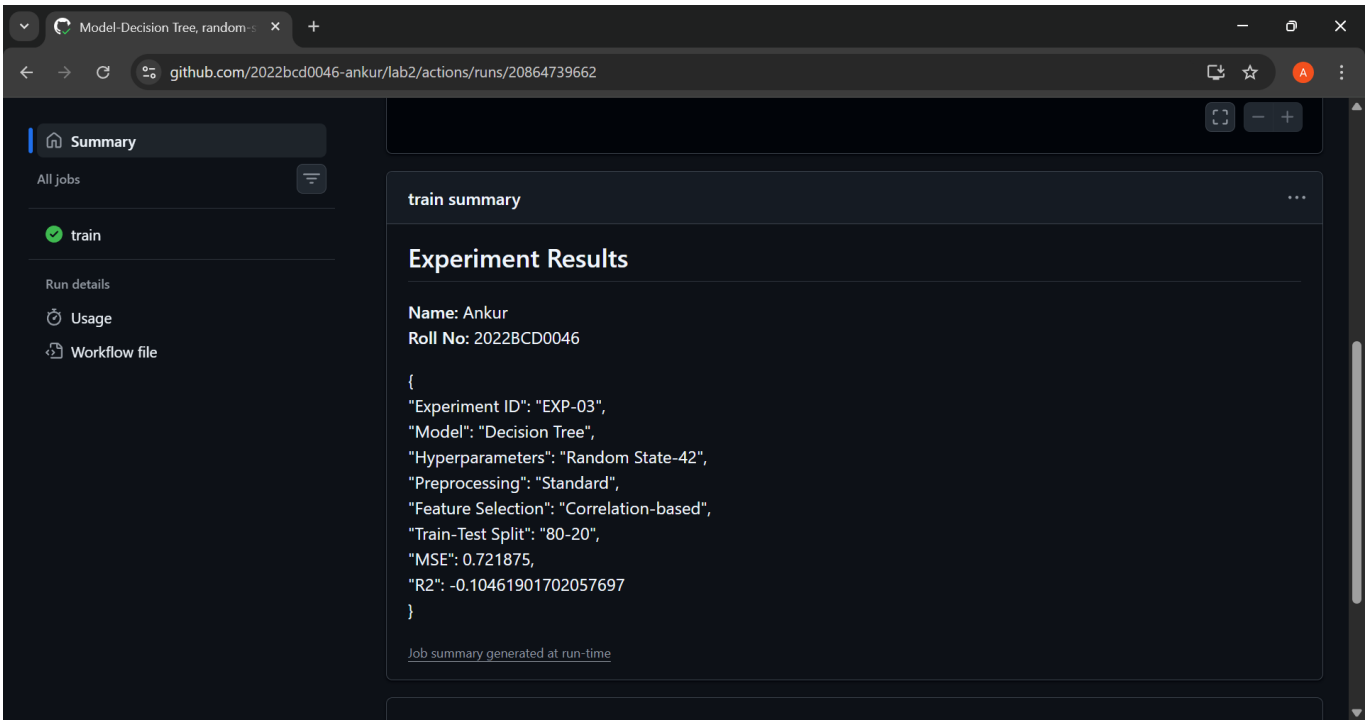

Model-LinearRegression, ridge
github.com/2022bcd0046-ankur/lab2/actions/runs/20864554637
2022bcd0046-ankur / lab2
Type / to search
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
ML Training Pipeline - 2022BCD0046 Ankur
Model-LinearRegression, ridge-alpha-1, test-0.2, std-scaler #6
Re-run all jobs
Summary
All jobs
train
Run details
Usage
Workflow file
Triggered via push 8 minutes ago
Ankur7891 pushed 853ac20 main
Status
Success
Total duration
25s
Artifacts
1
train.yml
on: push
train 22s

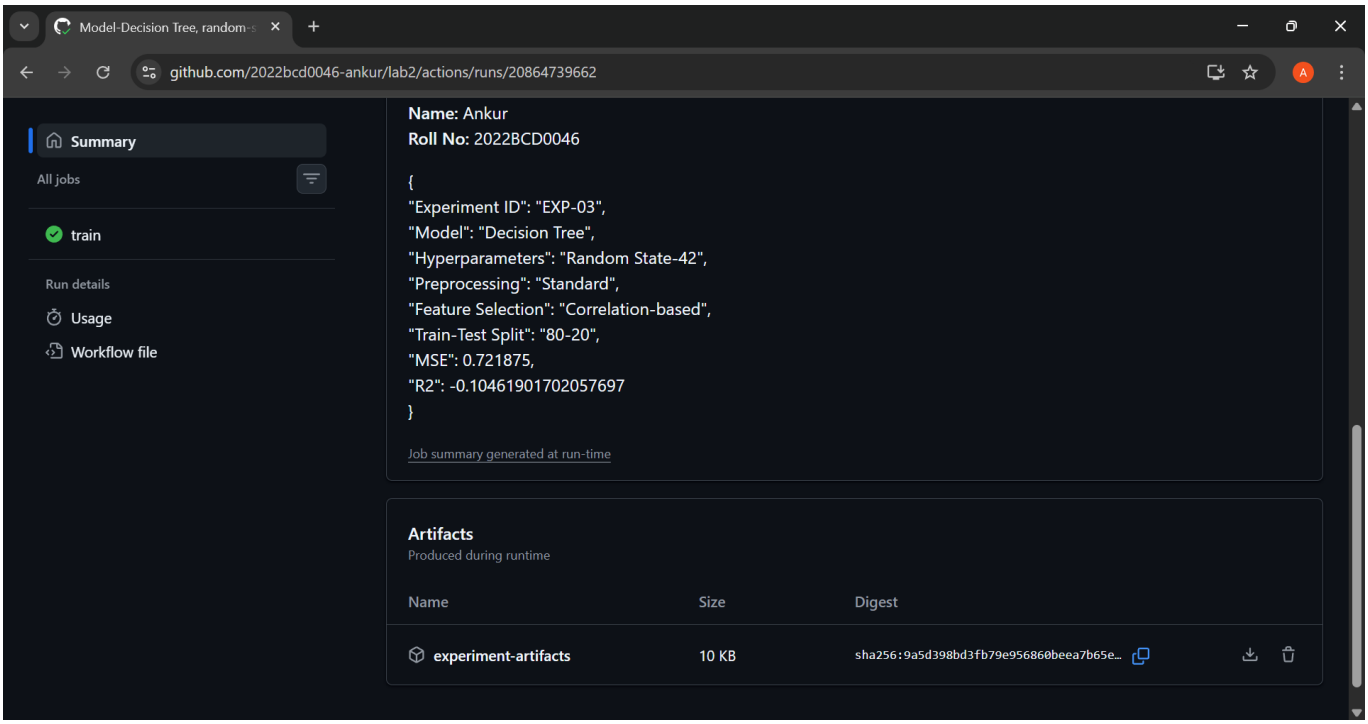

Model-LinearRegression, ridge
github.com/2022bcd0046-ankur/lab2/actions/runs/20864554637
Summary
All jobs
train
Run details
Usage
Workflow file
train summary
Experiment Results
Name: Ankur
Roll No: 2022BCD0046
{
"Experiment ID": "EXP-02",
"Model": "Linear Regression",
"Hyperparameters": "Ridge Alpha-1",
"Preprocessing": "Standard",
"Feature Selection": "All Features",
"Train-Test Split": "80-20",
"MSE": 0.3900365808244968,
"R2": 0.4031628405022718
}
Job summary generated at run-time



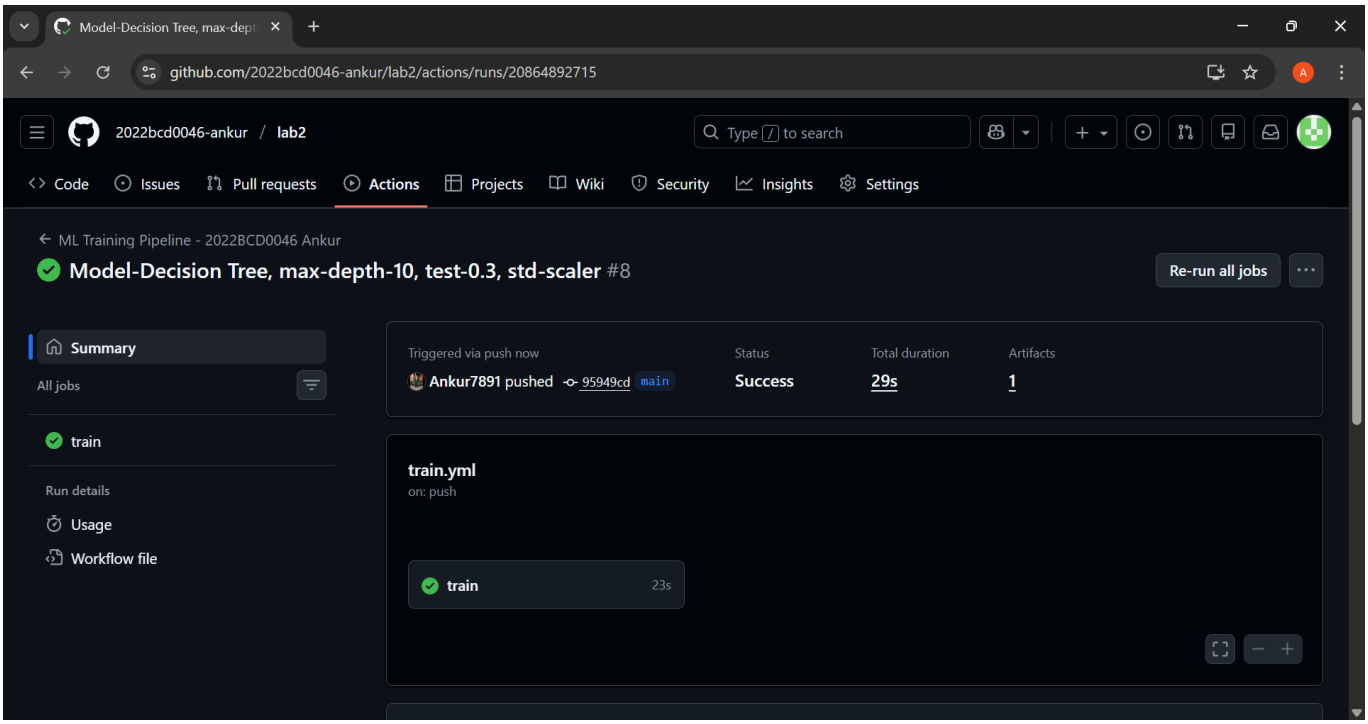
- EXP-03: Run Link

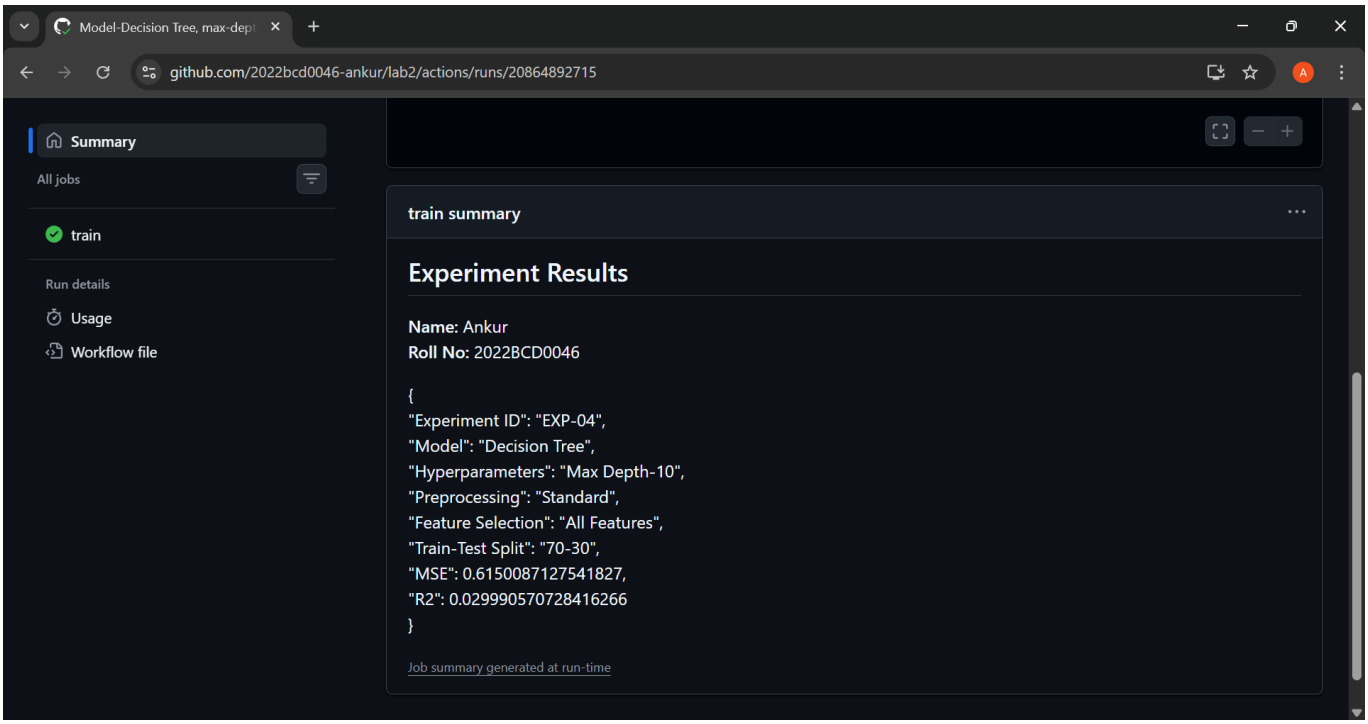

Model-Decision Tree, random-s
github.com/2022bcd0046-ankur/lab2/actions/runs/20864739662
2022bcd0046-ankur / lab2
Type / to search
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
ML Training Pipeline - 2022BCD0046 Ankur
Model-Decision Tree, random-state-42, test-0.2, std-scaler, corr-feat... #7
Re-run all jobs
Summary
All jobs
train
Run details
Usage
Workflow file
Triggered via push 2 minutes ago
Ankur7891 pushed 25caa3d main
Status
Success
Total duration
30s
Artifacts
1
train.yml
on: push
train
28s

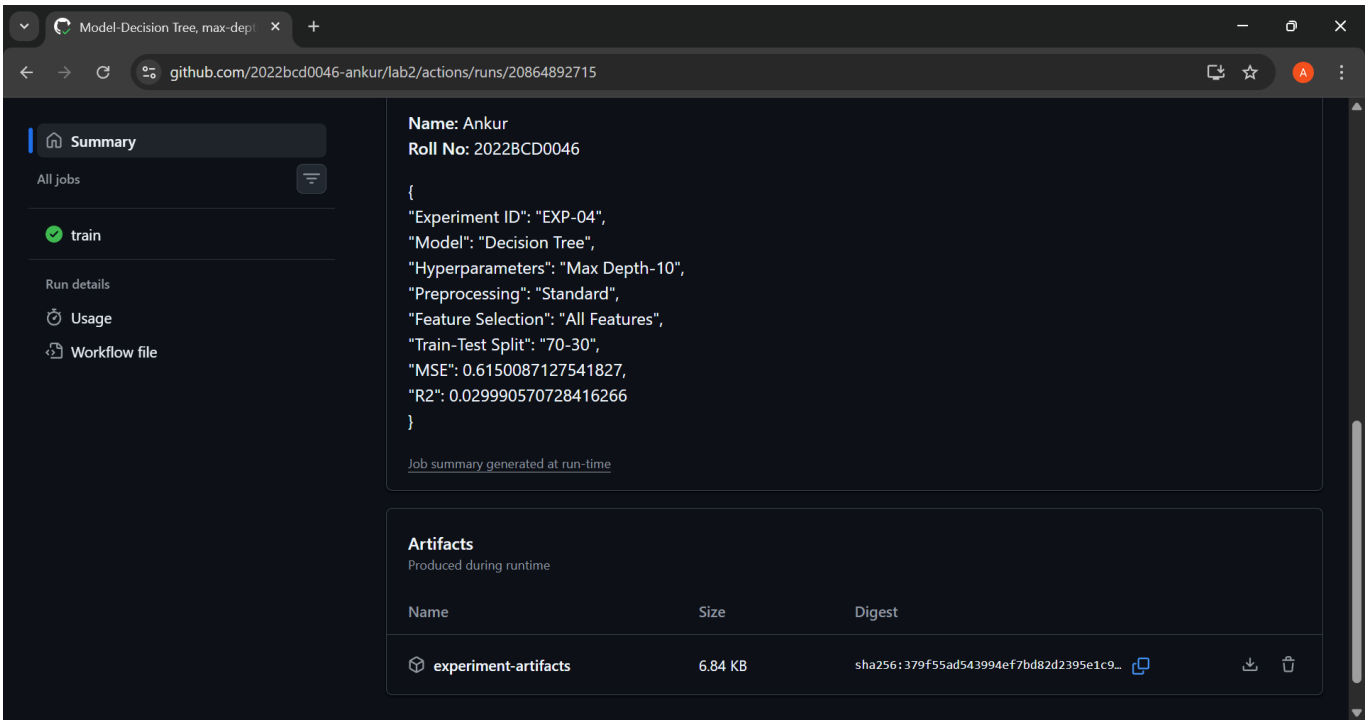

Model-Decision Tree, random-s
github.com/2022bcd0046-ankur/lab2/actions/runs/20864739662
Summary
All jobs
train
Run details
Usage
Workflow file
train summary
Experiment Results
Name: Ankur
Roll No: 2022BCD0046
{
"Experiment ID": "EXP-03",
"Model": "Decision Tree",
"Hyperparameters": "Random State-42",
"Preprocessing": "Standard",
"Feature Selection": "Correlation-based",
"Train-Test Split": "80-20",
"MSE": 0.721875,
"R2": -0.10461901702057697
}
Job summary generated at run-time



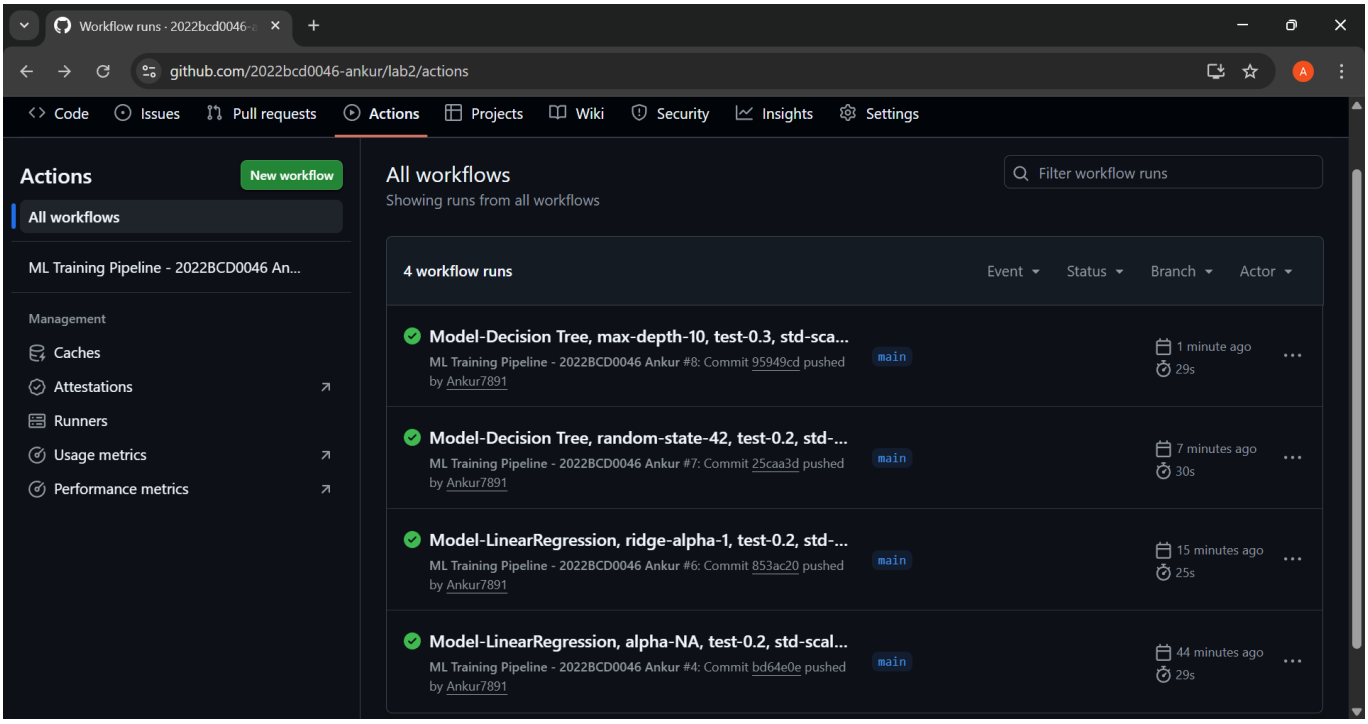
- EXP-04: Run Link


Model-Decision Tree, max-dept
github.com/2022bcd0046-ankur/lab2/actions/runs/20864892715
2022bcd0046-ankur / lab2
Type / to search
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
ML Training Pipeline - 2022BCD0046 Ankur
Model-Decision Tree, max-depth-10, test-0.3, std-scaler #8
Re-run all jobs
Summary
All jobs
train
Run details
Usage
Workflow file
Triggered via push now
Ankur7891 pushed 95949cd main
Status
Success
Total duration
29s
Artifacts
1
train.yml
on: push
train 23s


Model-Decision Tree, max-dept
github.com/2022bcd0046-ankur/lab2/actions/runs/20864892715
Summary
All jobs
train
Run details
Usage
Workflow file
train summary
Experiment Results
Name: Ankur
Roll No: 2022BCD0046
{
"Experiment ID": "EXP-04",
"Model": "Decision Tree",
"Hyperparameters": "Max Depth-10",
"Preprocessing": "Standard",
"Feature Selection": "All Features",
"Train-Test Split": "70-30",
"MSE": 0.6150087127541827,
"R2": 0.029990570728416266
}
Job summary generated at run-time



- Overall Runs...



3. Analysis Questions

1. How did GitHub Actions improve reproducibility?

- GitHub Actions ensured that every experiment ran in a fixed, automated environment with the same dependency versions and execution steps, making results reproducible across runs.

2. How easy was it to compare results across runs?

- Comparison was easy because each run produced metrics in the Job Summary and downloadable JSON artifacts, allowing side-by-side inspection.

3. What role does Git commit history play in experiment tracking?

- Each commit represents a unique experiment configuration, providing a clear and traceable history of changes and their corresponding results.

4. Benefits compared to Lab 1

- Unlike Lab 1, experiments were automated, reproducible and centrally logged, reducing manual effort and error.

5. Limitations

- Hyperparameter changes are still manual.