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ProM-Ex 🍀

Welcome!

Upload a CSV file, and I will detect and explain their anomalies.

Dataset Preview:

	org:resource	concept:name	blocked	isClosed	flagD	flagB	flagA	state	lifecycle:transiti
0	ResA	NEW	☐	☑	☑	☐	☐	In progress	complete
1	None	FIN						Closed	complete
2	None	RELEASE						Released	complete
3	None	CODE OK						None	complete
4	ResB	BILLED						Billed	complete

Select Case ID Column

org:resource

Select Activity Column

state

Detected Anomalies:

org:res	state

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4	ResB	BILLED						Billed	complete

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Select Case ID Column

org:resource

Select Activity Column

state

Detected Anomalies:

org:res	state						
ResA	In progress	In progress	In progress	Closed	In progress	Closed	Clos
ResDB	Unbillable	In progress	Rejected	nan	In progress	In progress	Releas
ResGA	In progress	Invoice rejected	In progress	In progress	In progress	In pro	
ResIA	Billed	Billed	Released	In progress	In progress	In progress	In progre
ResNC	In progress	In progress	In progress	Closed	Closed	In progress	In pr
ResQA	Released	In progress	In progress	In progress	In progress	In progress	
ResSB	In progress	Unbillable	In progress	In progress	In progress	Invoice reje	
ResU	Invoice rejected	Billed	Billed	Billed	Billed	Billed	Invoice rejected
ResWB	In progress	nan	In progress	Invoice rejected	In progress	In progress	
ResXD	In progress	Invoice rejected	In progress	Invoice rejected	In progress	I	

SHAP Analysis

Feature Importance Plot

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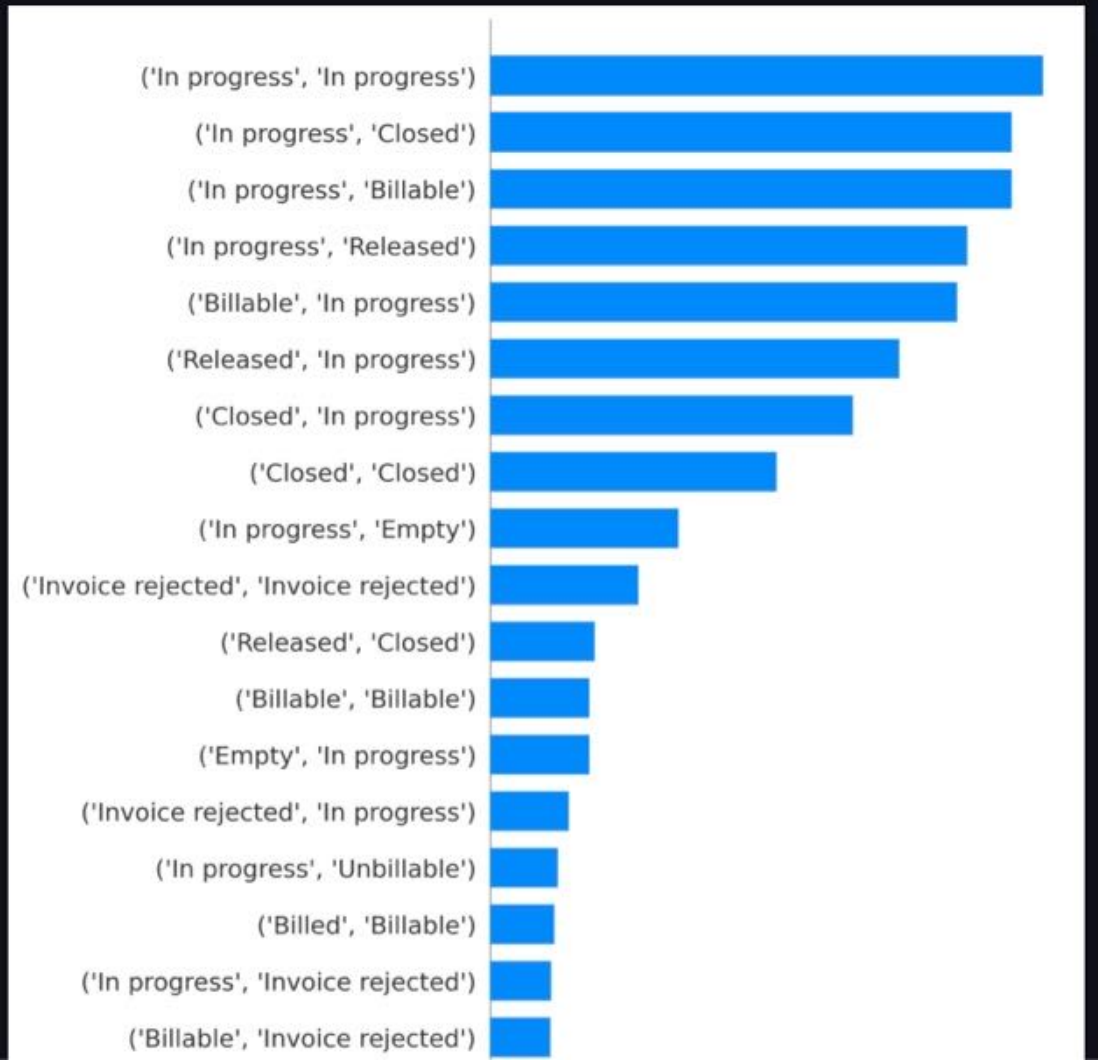
SHAP Analysis

Feature Importance Plot



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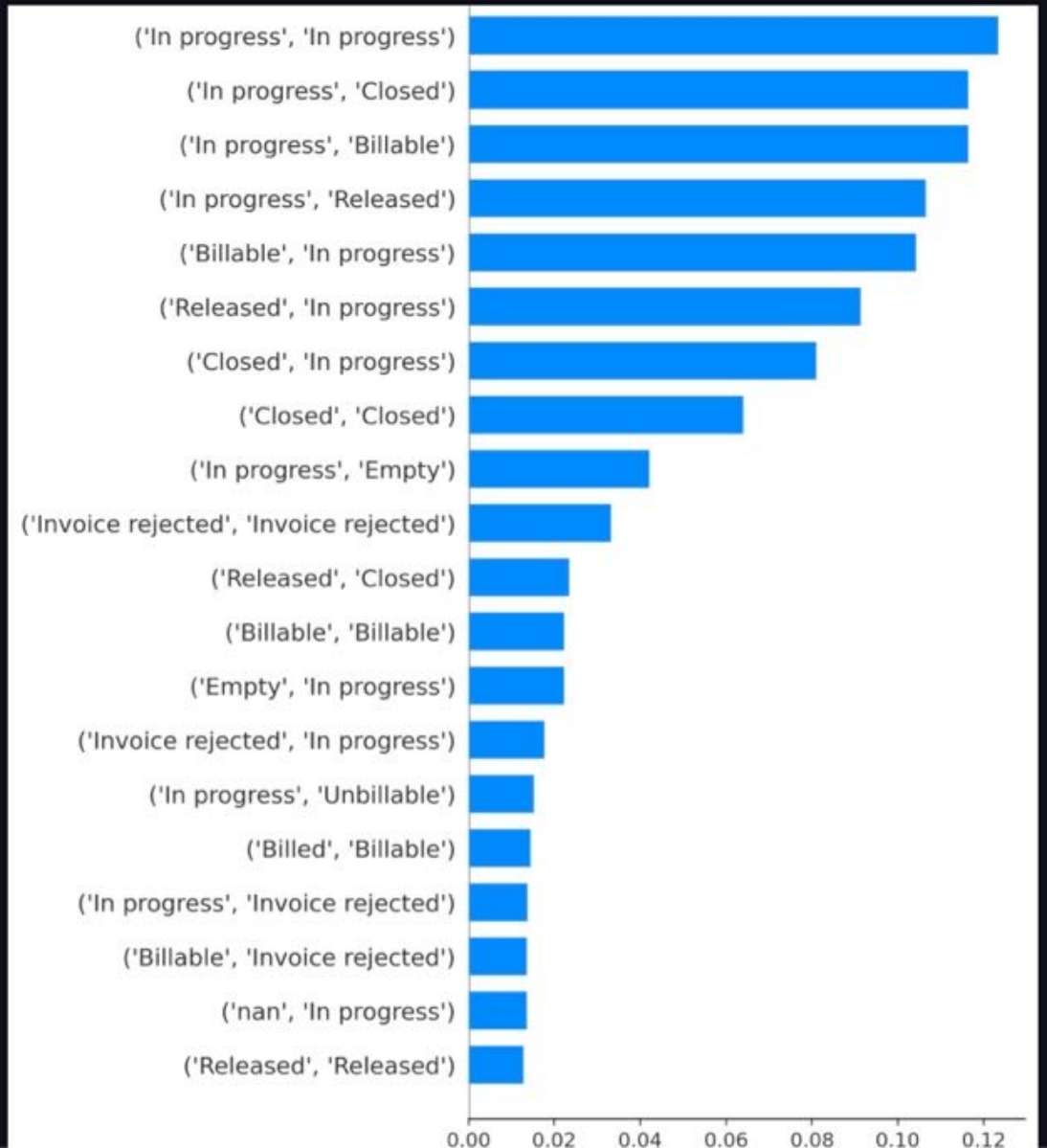

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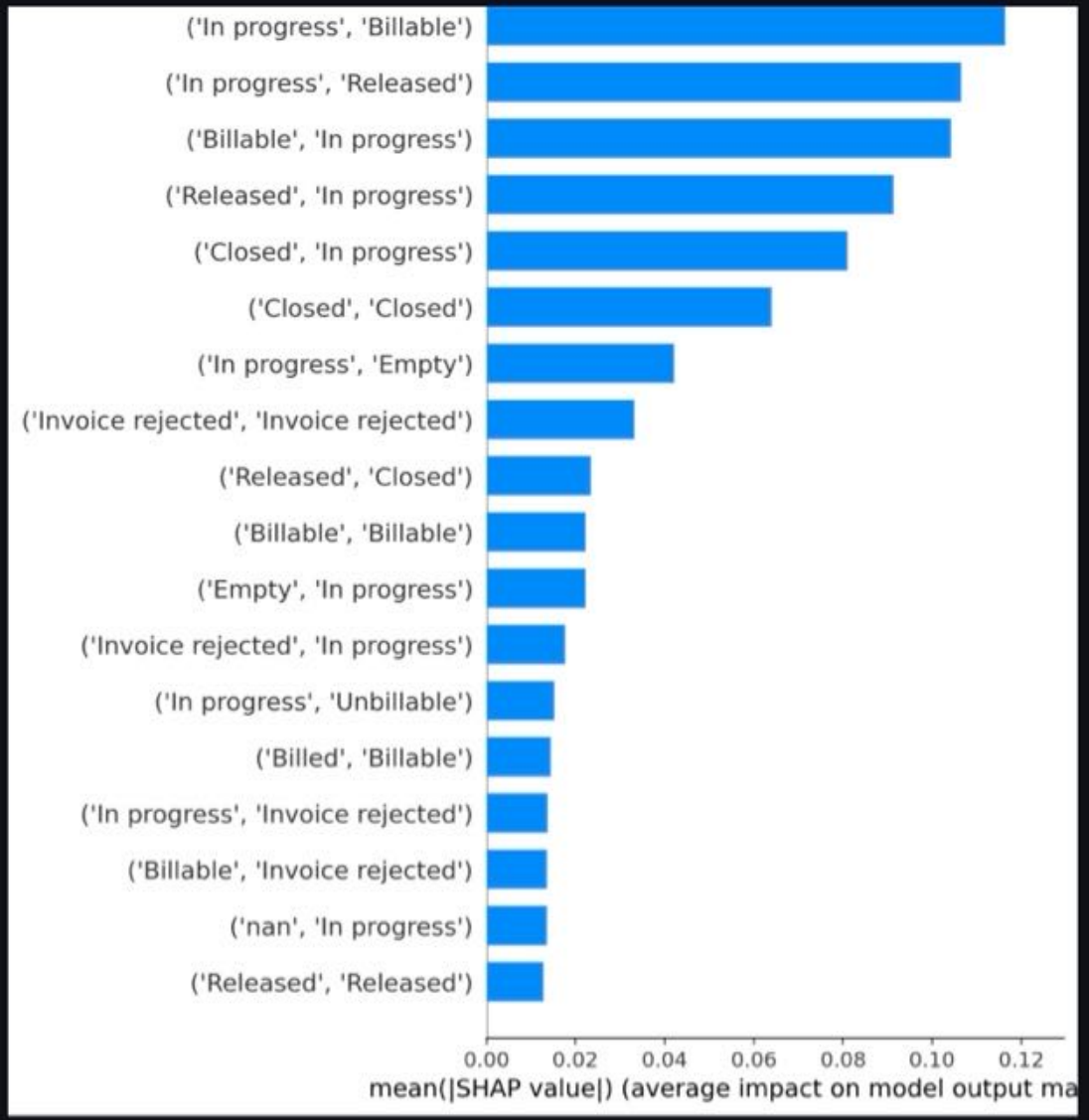

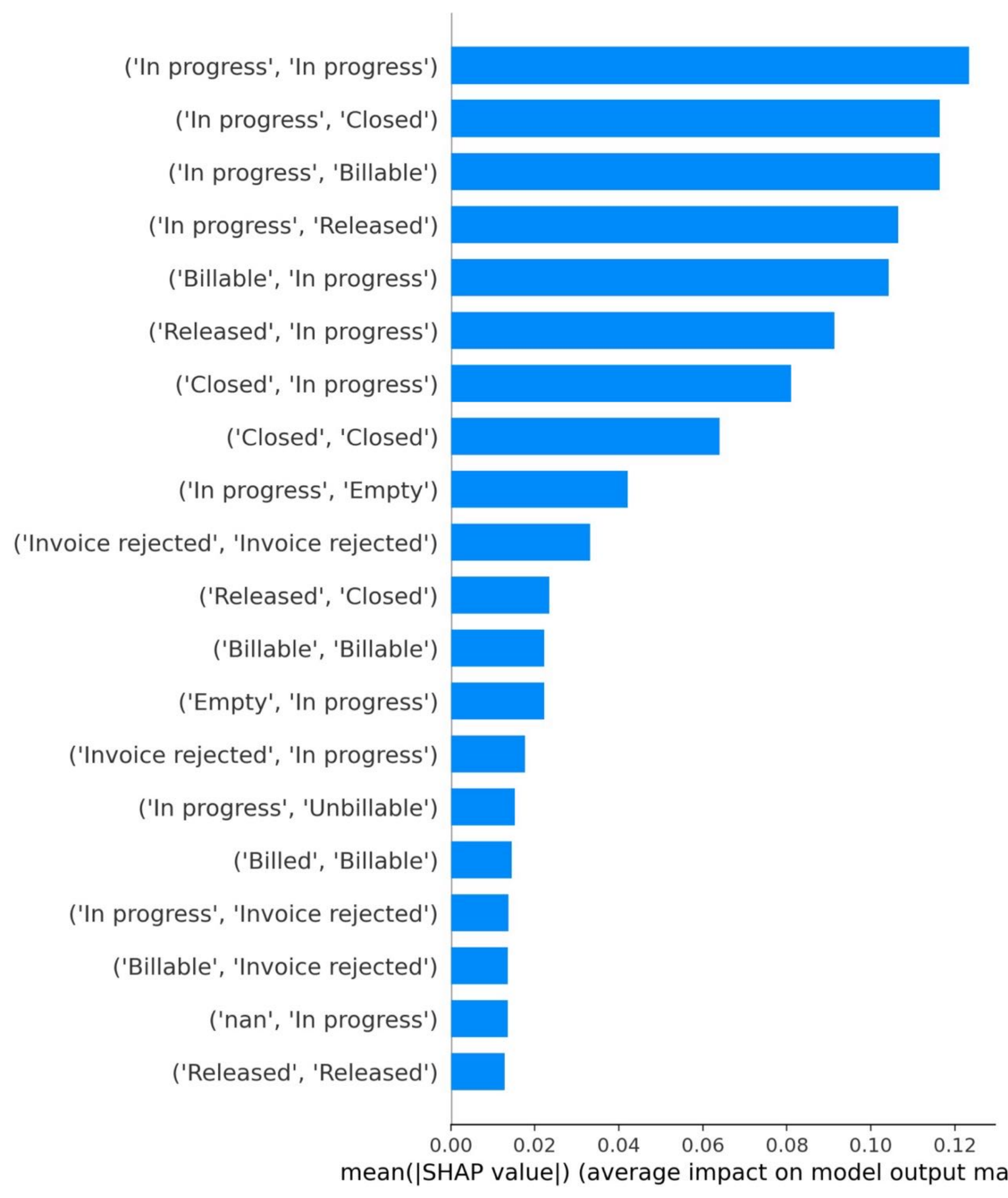
('In progress', 'In progress')
('In progress', 'Closed')
('In progress', 'Billable')
('In progress', 'Released')
('Billable', 'In progress')
('Released', 'In progress')
('Closed', 'In progress')
('Closed', 'Closed')
('In progress', 'Empty')
('Invoice rejected', 'Invoice rejected')
('Released', 'Closed')
('Billable', 'Billable')
('Empty', 'In progress')
('Invoice rejected', 'In progress')
('In progress', 'Unbillable')
('Billed', 'Billable')
('In progress', 'Invoice rejected')
('Billable', 'Invoice rejected')
('nan', 'In progress')
('Released', 'Released')
0.00
0.02
0.04
0.06
0.08
0.10
0.12
mean(|SHAP value|) (average impact on model output ma

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LLM-based SHAP Explanation

1. Possible reasons for these features' importance in anomaly detection:

- **Transition between "In progress" and other states:** The high importance of n-grams involving "In progress" suggests that transitions from "In progress" to other states (e.g., "Closed," "Billable," "Released") are significant indicators of anomalies. This could indicate that cases that deviate from the expected progression through the workflow (e.g., skipping steps or looping back) are more likely to be anomalous.
- **Repetitive "In progress" states:** The importance of n-grams like ("In progress", "In progress") may indicate that cases that remain in the "In progress" state for extended periods or cycle back and forth between "In progress" and other states are more likely to be anomalies. This could suggest inefficiencies or bottlenecks in the workflow.
- **Billing-related transitions:** The importance of n-grams involving "Billable" suggests that transitions related to billing (e.g., from "In progress" to "Billable") are important indicators of anomalies. This could indicate cases where billing is not handled correctly or where there are discrepancies between the work performed and the billing status.

2. Impact of these features on the overall anomaly detection process:

- **Improved accuracy:** By considering these important n-grams, the anomaly detection algorithm can more effectively identify cases that deviate from the expected workflow patterns. This leads to improved accuracy in detecting anomalies.
- **Reduced false positives:** By focusing on specific transitions and states that are highly indicative of anomalies, the algorithm can reduce the number of false positives (i.e., cases that are incorrectly identified as anomalies).
- **Enhanced interpretability:** The importance scores of these n-grams provide insights into the specific aspects of the workflow that contribute to anomaly detection. This enhances the interpretability of the anomaly detection results.

3. Recommendations for handling or further analyzing these features in future analyses:

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- **Enhanced interpretability:** The importance scores of these n-grams provide insights into the specific aspects of the workflow that contribute to anomaly detection. This enhances the interpretability of the anomaly detection results.

3. Recommendations for handling or further analyzing these features in future analyses:

- **Further investigation of "In progress" transitions:** Conduct a detailed analysis of cases that involve transitions from "In progress" to other states. Identify the reasons for these transitions and explore ways to optimize the workflow to reduce anomalies.
- **Monitoring of repetitive "In progress" states:** Implement mechanisms to monitor cases that remain in the "In progress" state for extended periods. Investigate the underlying causes and take corrective actions to prevent these anomalies.
- **Review of billing-related transitions:** Examine cases involving transitions related to billing. Ensure that billing is handled correctly and that there are no discrepancies between the work performed and the billing status.
- **Incorporate additional features:** Consider incorporating other relevant features into the anomaly detection model, such as case attributes, timestamps, or resource assignments. This can further enhance the accuracy and interpretability of the results.