

Anomaly Detection and Prediction for Crane Operation

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This subproject of STREAM concerns condition monitoring and maintenance of cranes in container terminals.

- Find cranes which behave different, for early detection of upcoming problems
- Find cranes with lower productivity, and estimate the cost. Use this to recommend maintenance.
- Visualize the detected indications, to give an overview of the status of the cranes.

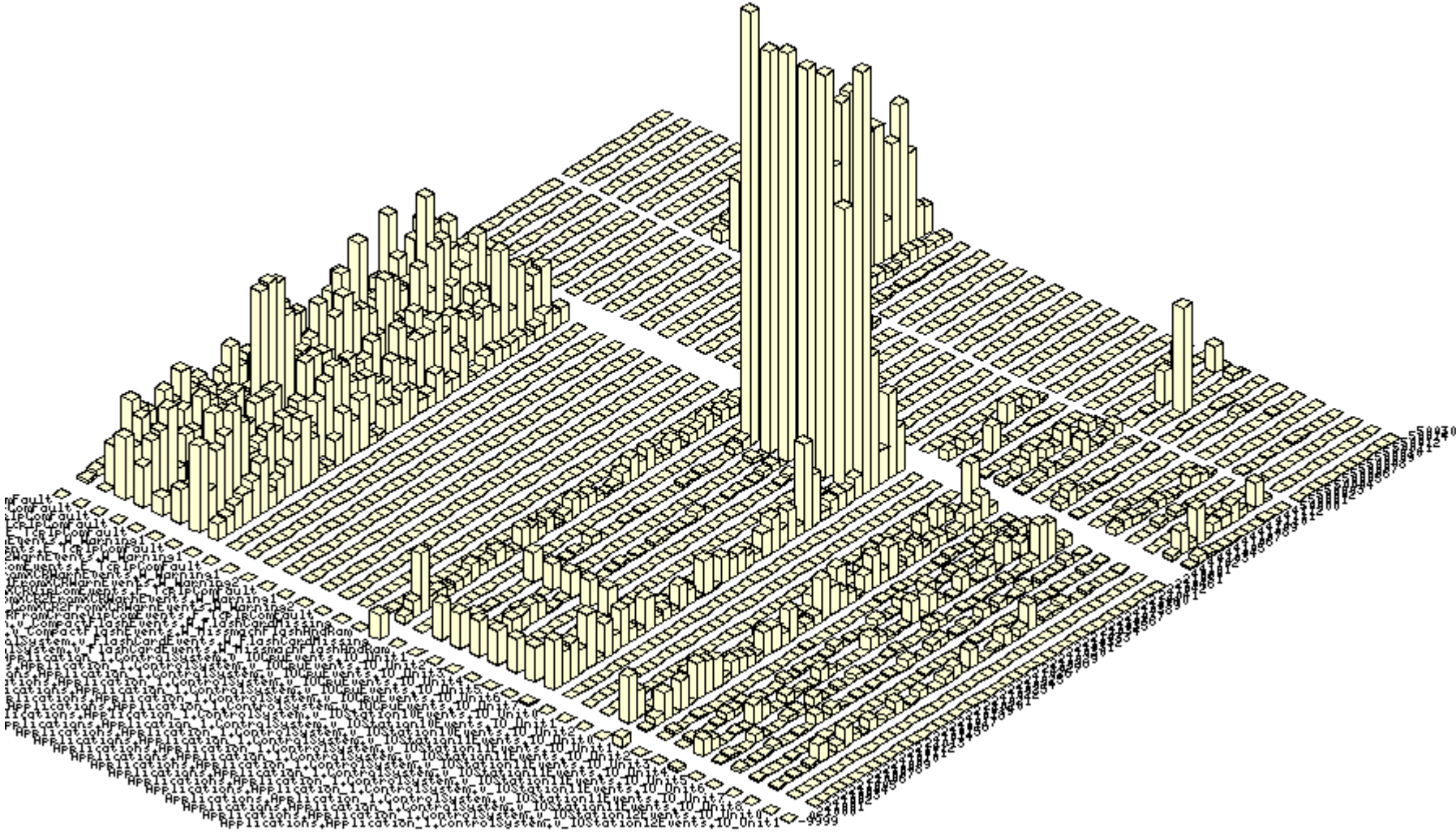
An anomaly detector for practical use must:

- Be able to handle a large number of features
- Be able to handle several different normal states
- Allow real training data including anomalies
- Be fast when dealing with huge data sets
- Be robust in the light of small amounts of data
- Give only small amounts of false alarms
- Have high sensitivity to anomalies

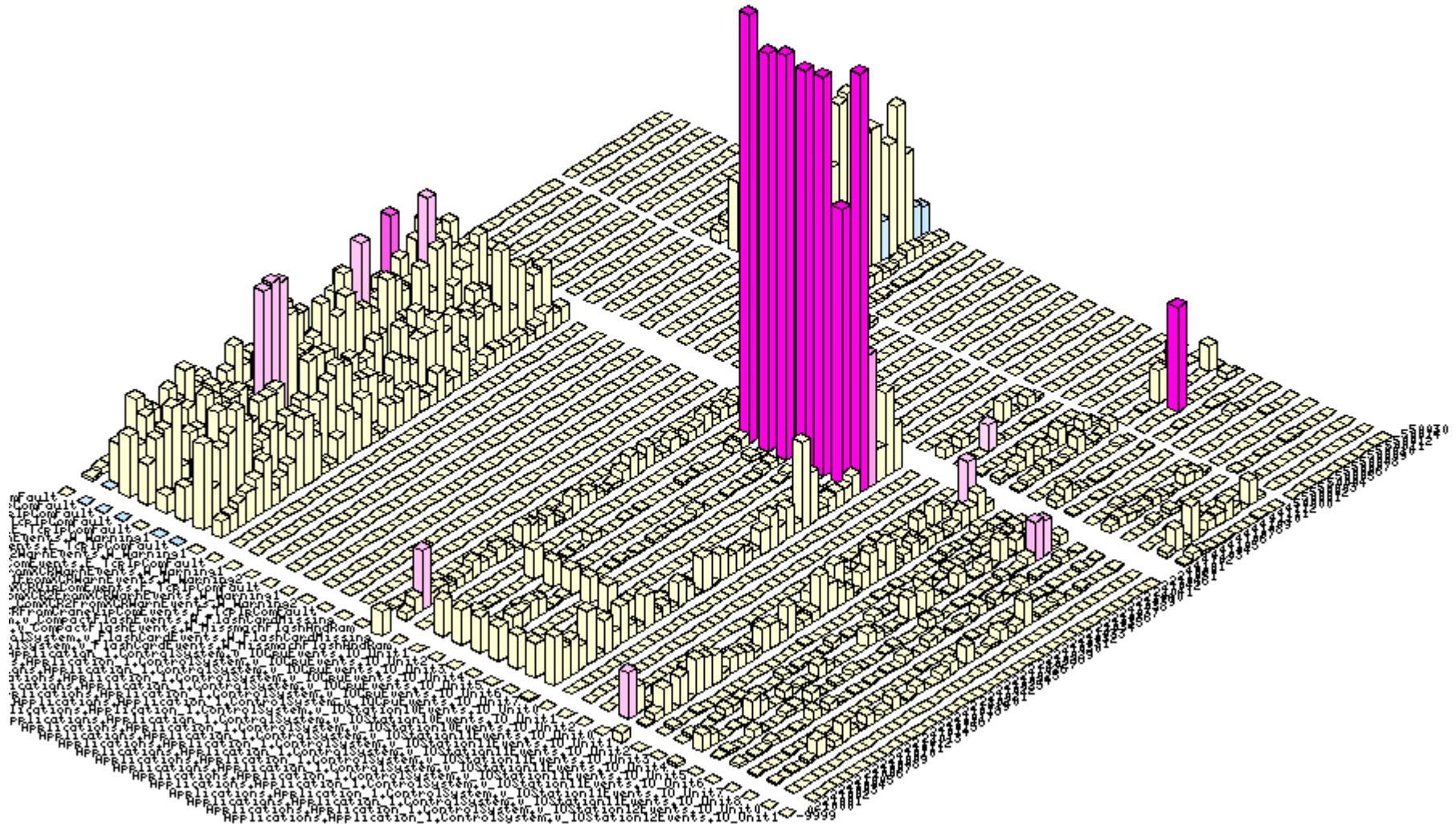
Event data during one year for a set of cranes



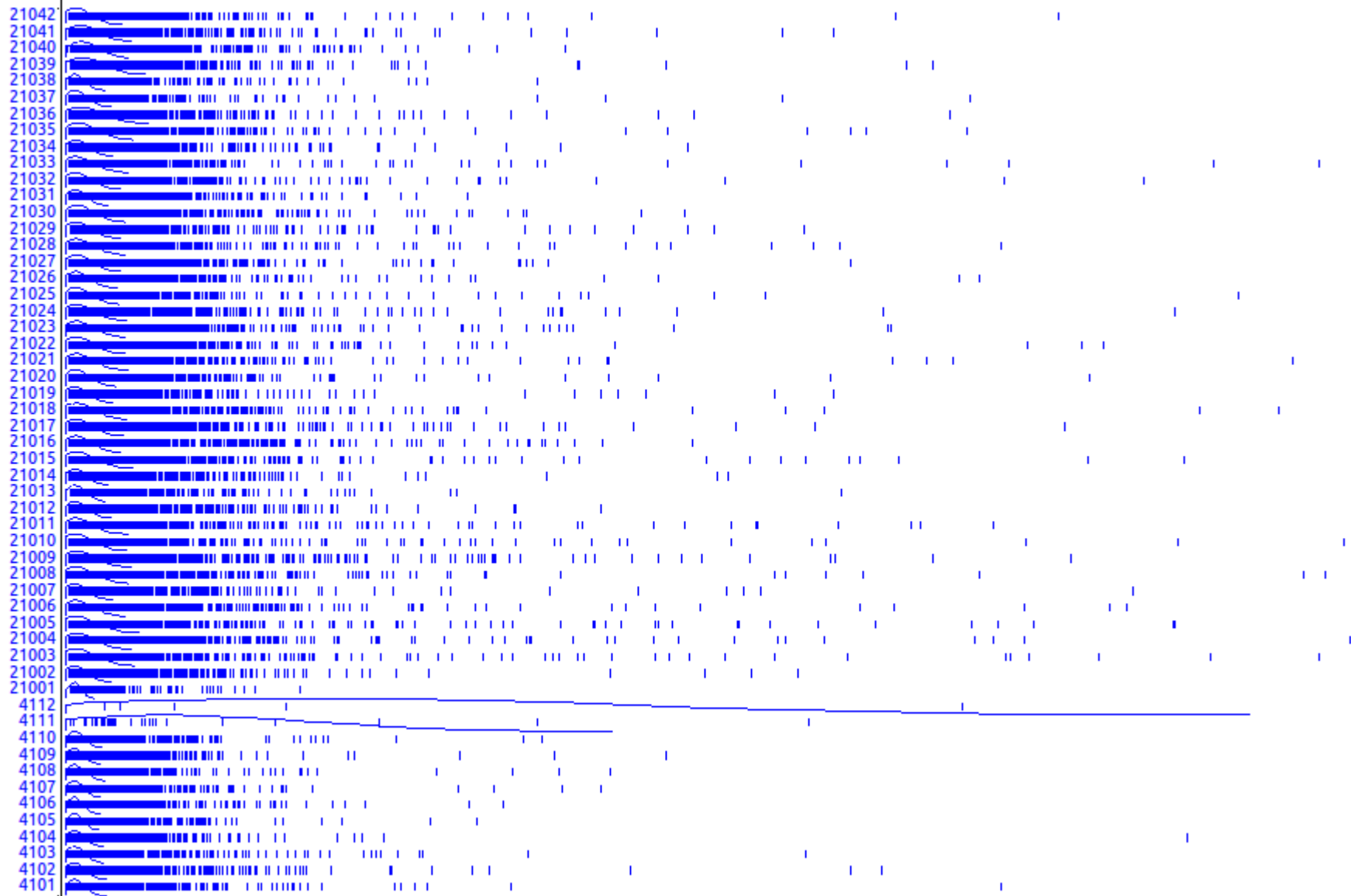
Accumulated event counts per crane and event type



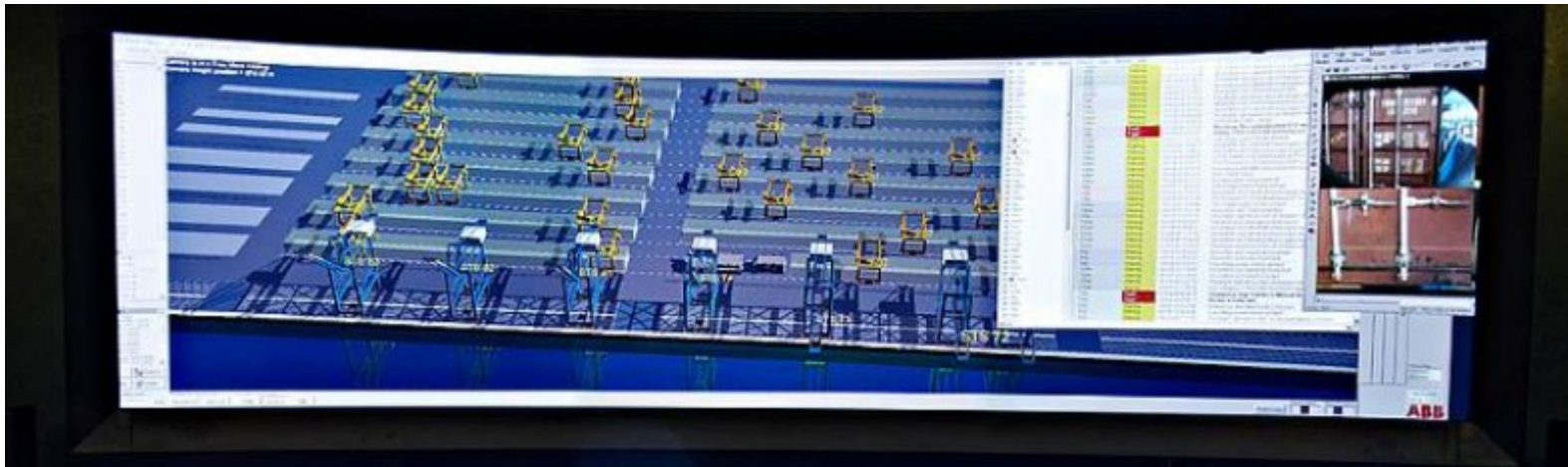
Anomalous event counts visualized with color



Time duration of each crane move, used to predict performance loss due to problems



Current visualization of crane status



One objective is to add visualization of anomalies and performance loss predictions to this view.