



Universidade de São Paulo

TRIVIR: A Visualization System to Support Document Retrieval with High Recall

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Introduction

What is the Motivation?

Motivation



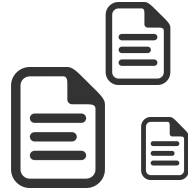
User

A scientist needs to discover relevant information about her research, e.g. studying the literature.

Motivation



User



Query

She already knows some interesting papers that can be useful to start the search.

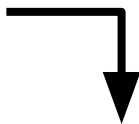
Motivation



User



Query



She tries to find relevant information in a collection of papers (a corpus).



Corpus

Motivation

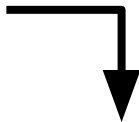


User



Query

She identifies relevant papers in the collection.



Corpus



Relevant Docs

Introduction

What is the Problem?

Problem

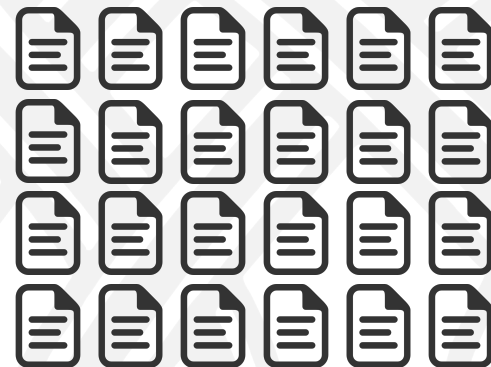
Think about this situation



Problem

Think about this situation

- There is a Corpus containing **lots of documents**;



Problem

Think about this situation

- There is a Corpus containing lots of documents;
- You identified one or a few **'interesting'** documents;



Problem

Think about this situation

- There is a Corpus containing lots of documents;
- You identified one or a few 'interesting' documents;
- Find other related (i.e., **also interesting**) documents;



Problem

Think about this situation

- There is a Corpus containing lots of documents;
- You identified one or a few 'interesting' documents;
- Find other related (i.e., also interesting) documents;
- How can you identify (nearly) all the **relevant** documents in a corpus with lots of documents?



Problem

Think about this situation

- There is a Corpus containing lots of documents;
- You identified one or a few 'interesting' documents;
- Find other related (i.e., also interesting) documents;
- How can you identify (nearly) all the **relevant** documents in a corpus with lots of documents?



Analyze **ALL** documents?

Problem

Think about this situation

- There is a Corpus containing lots of documents;
- You identified one or a few 'interesting' documents;
- Find other related (i.e., also interesting) documents;
- How can you identify (nearly) all the **relevant** documents in a corpus with lots of documents?

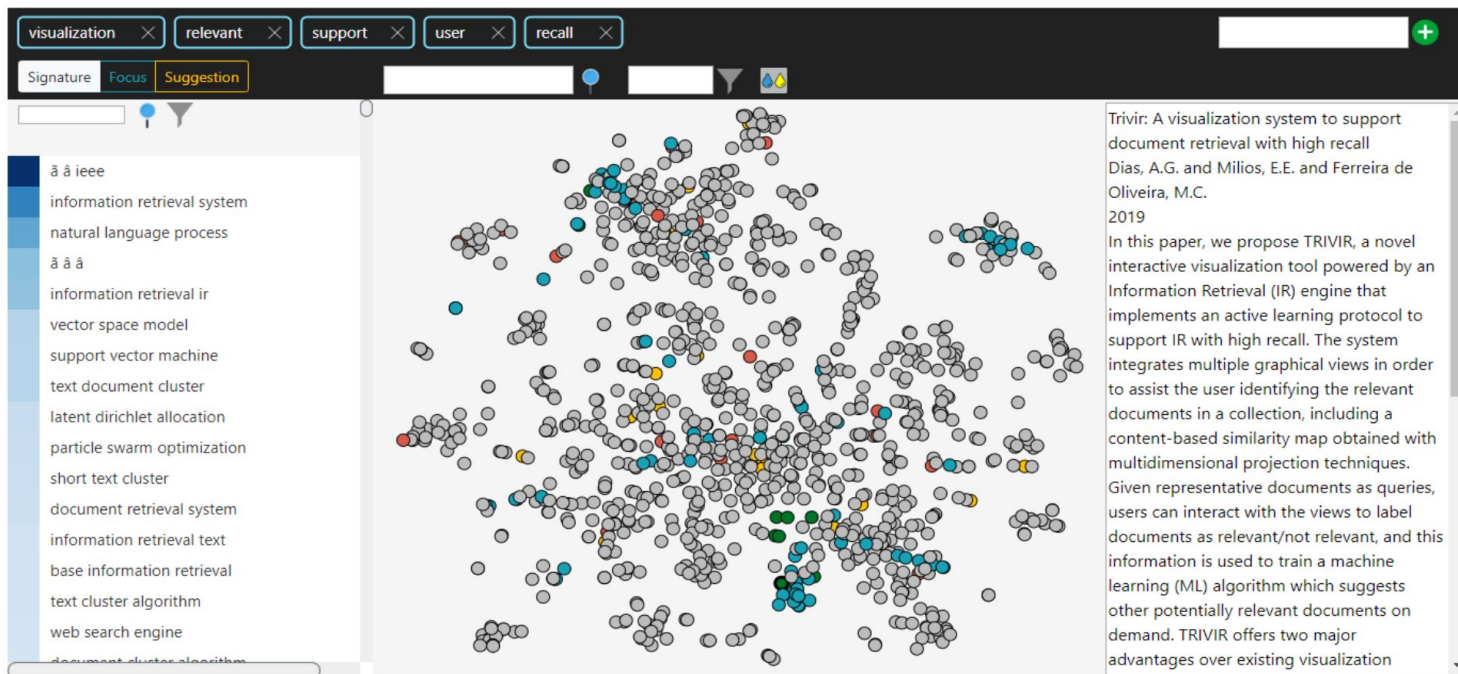


Machine Learning (ML) +
Visual Analytics (VA)

TRIVIR

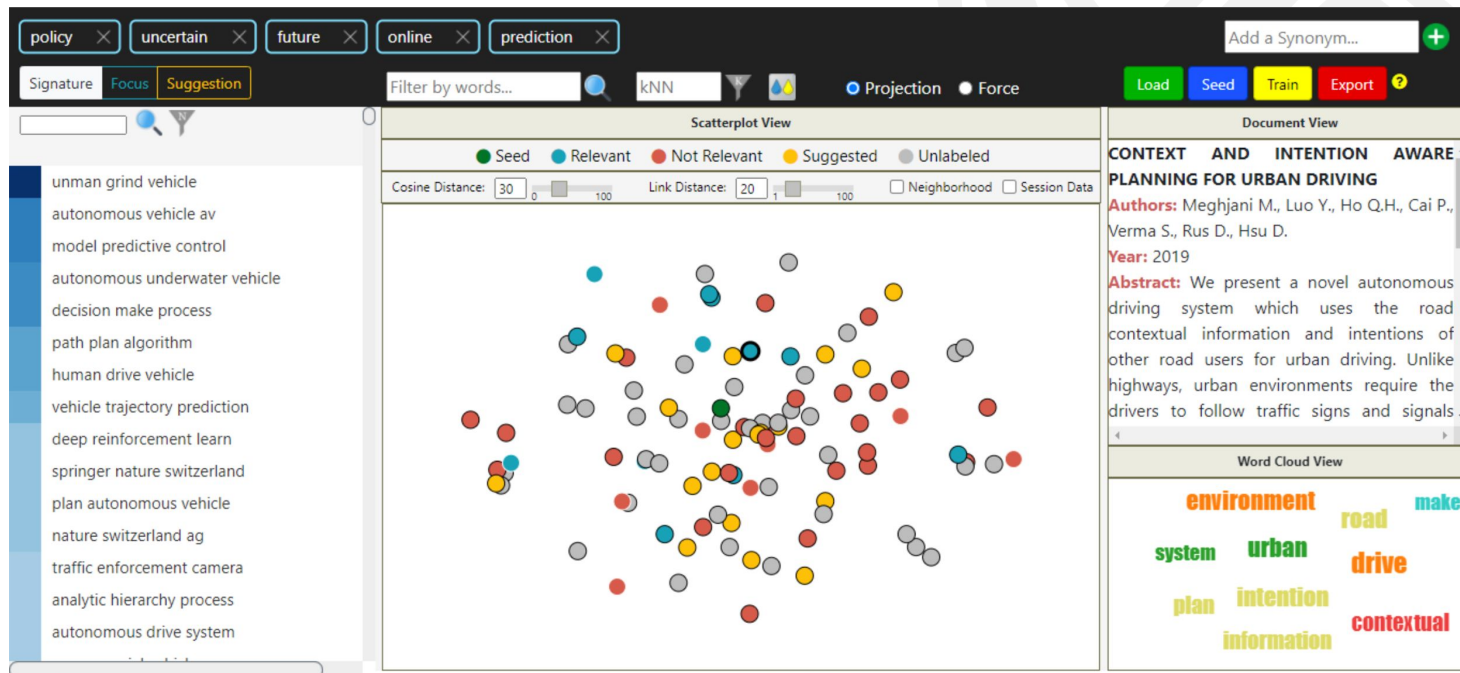
The Visualization System

TRIVIR



Visualization System

TRIVIR



Visualization System

TRIVIR

The screenshot shows the TRIVIR interface with the following components highlighted by numbered callouts:

- 1**: Scatterplot View (central area with colored dots and distance sliders)
- 2**: Document View (text area showing document metadata and abstract)
- 3**: Word Cloud View (area with colored words)
- 4**: Signature List (left sidebar with a list of terms)
- 5**: Focus List (left sidebar with a list of terms)
- 6**: Suggestion List (left sidebar with a list of terms)
- 7**: Terms View (top navigation bar with tabs like 'policy', 'uncertain', etc.)
- 8**: Buttons (top right area with 'Load', 'Seed', 'Train', 'Export' buttons)

- 1 Scatterplot View
- 2 Document View
- 3 Word Cloud View

- 4 Signature List
- 5 Focus List
- 6 Suggestion List

- 7 Terms View
- 8 Buttons

TRIVIR

The screenshot displays the TRIVIR software interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are buttons for 'Signature', 'Focus', and 'Suggestion'. A search bar labeled 'Filter by words...' is present. The main area is divided into three sections: a left sidebar with a list of terms, a central 'Scatterplot View' showing a network of nodes (colored green, blue, red, yellow, and grey) with adjustable 'Cosine Distance' and 'Link Distance' sliders, and a right 'Document View' showing a document snippet titled 'CONTEXT AND INTENTION AWARE PLANNING FOR URBAN DRIVING'. The 'Load' button in the top right corner is highlighted with a red box.

Load Button:

Click Load button to insert the Corpus into the system.

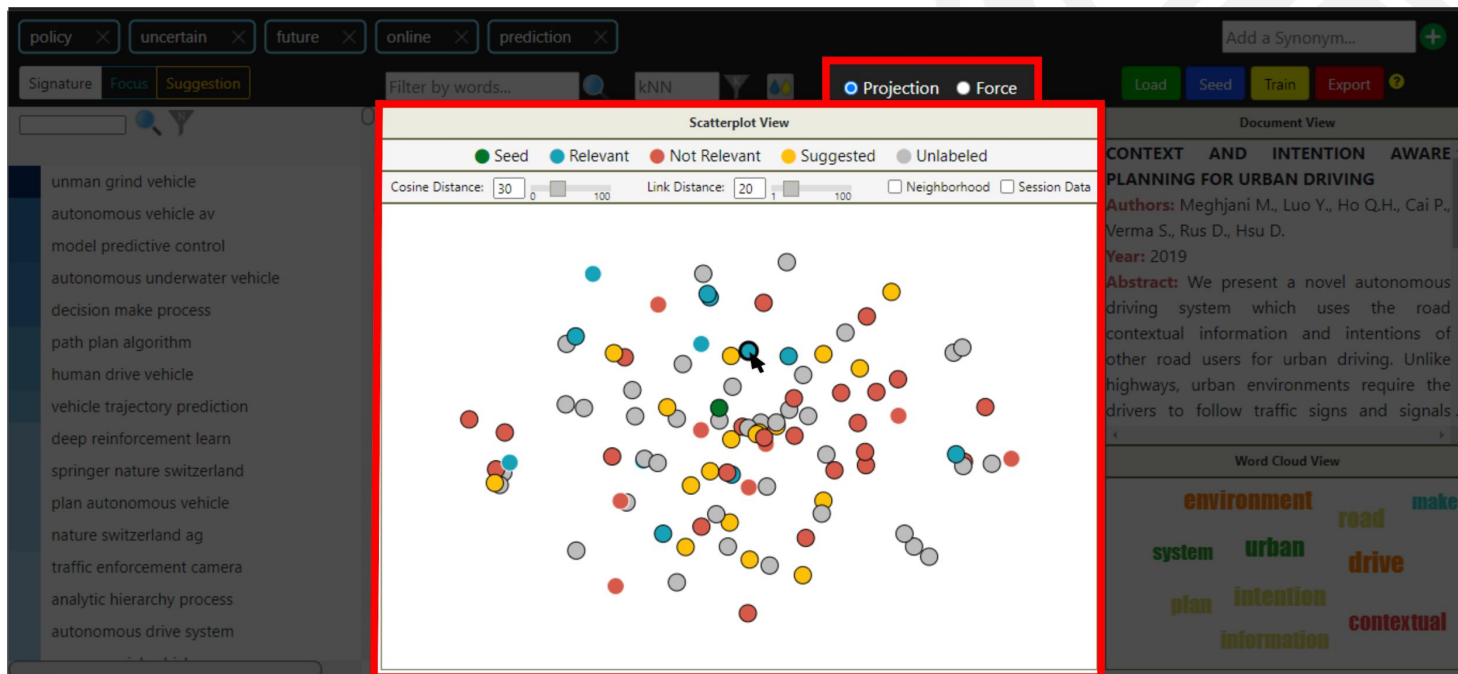
TRIVIR

The screenshot displays the TRIVIR interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are buttons for 'Signature', 'Focus', and 'Suggestion'. A search bar contains 'Filter by words...'. To the right, there are buttons for 'Load', 'Seed' (highlighted with a red box), 'Train', and 'Export'. The main area is divided into three sections: 'Scatterplot View' on the left, 'Document View' in the middle, and 'Word Cloud View' on the right. The 'Scatterplot View' shows a scatter plot of points colored by relevance: green for 'Seed', blue for 'Relevant', red for 'Not Relevant', yellow for 'Suggested', and grey for 'Unlabeled'. The 'Document View' shows a document titled 'CONTEXT AND INTENTION AWARE PLANNING FOR URBAN DRIVING' with authors and an abstract. The 'Word Cloud View' shows a word cloud with terms like 'environment', 'road', 'make', 'system', 'urban', 'drive', 'plan', 'intention', 'information', and 'contextual'.

Seed Button:

Click Seed button to choose the **initial query** (SEED Document).
A SEED is a document considered highly relevant to your search.

TRIVIR



Scatterplot view:
Similarity Map of Documents

TRIVIR

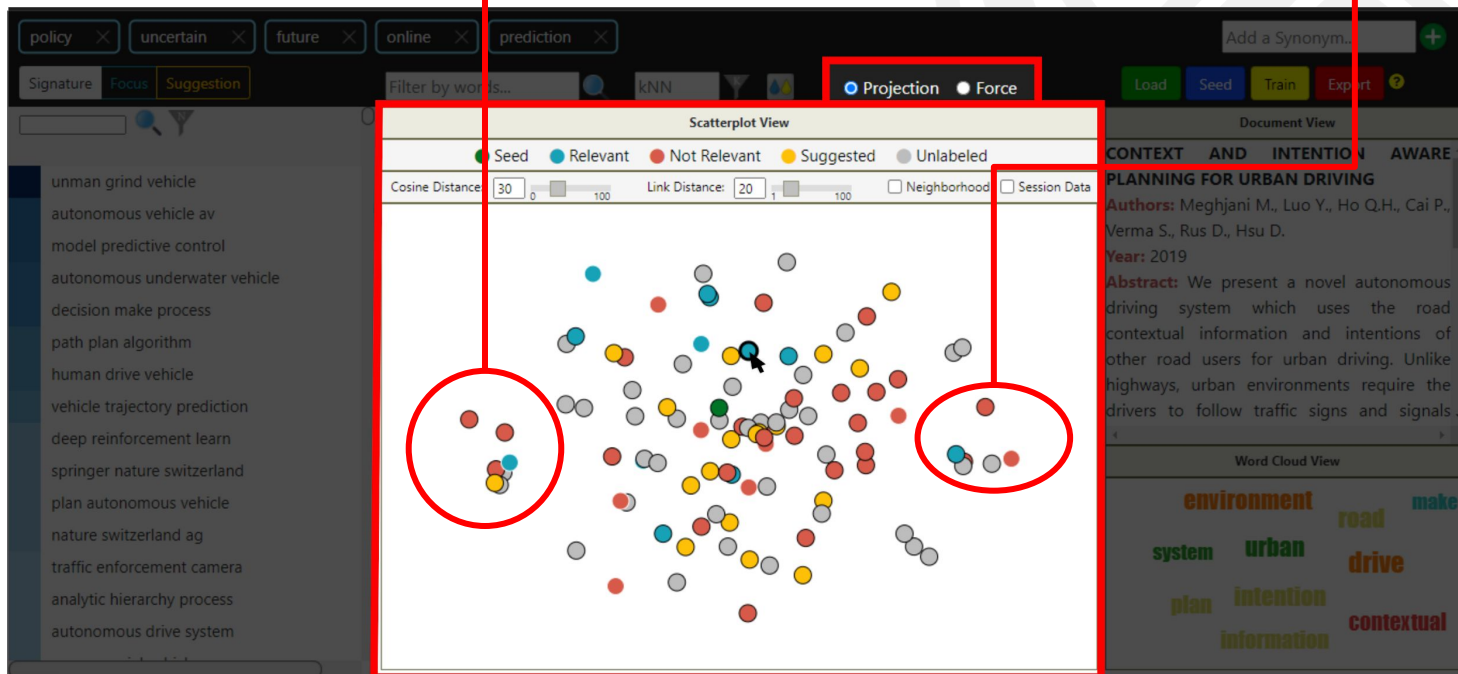
Documents



Scatterplot view:
Similarity Map of Documents

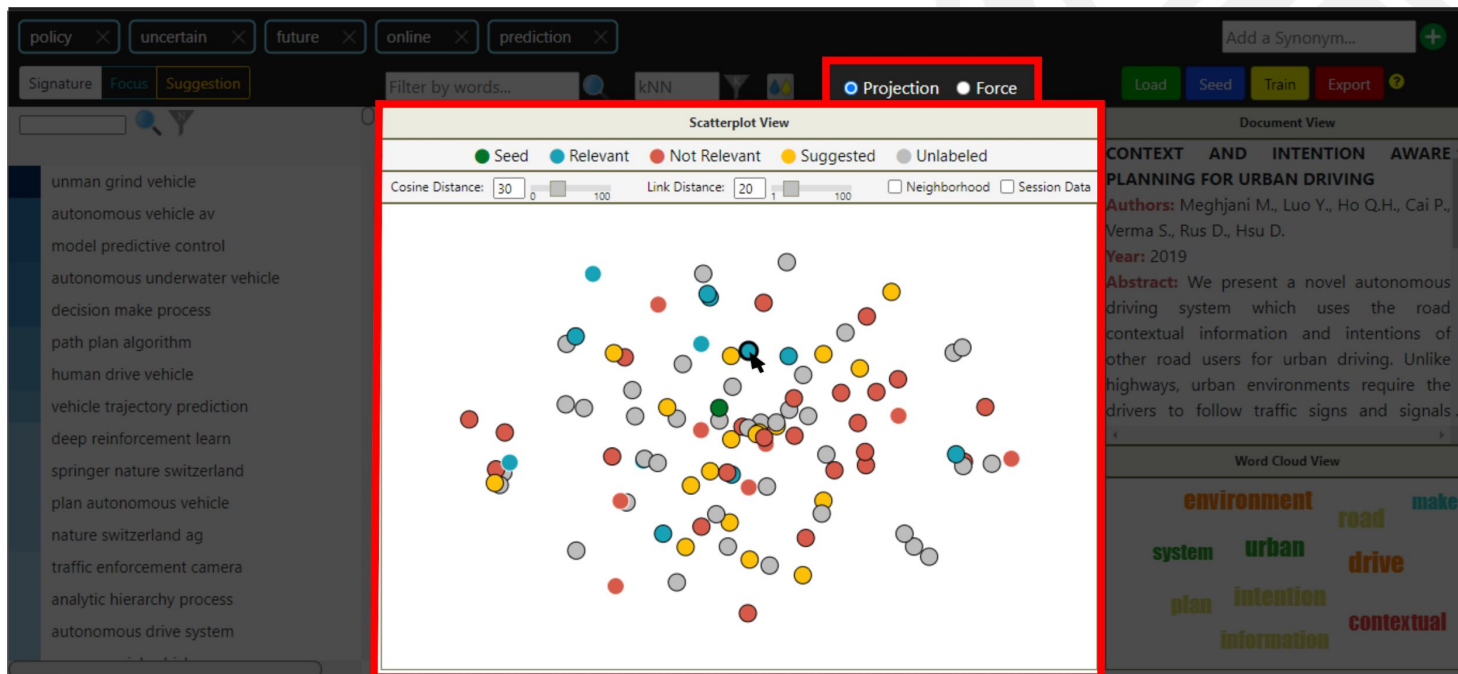
TRIVIR

Clusters of possibly similar documents
Multidimensional Projection



Scatterplot view:
Similarity Map of Documents

TRIVIR

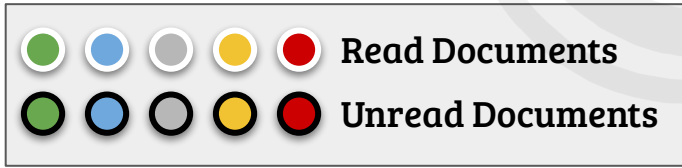
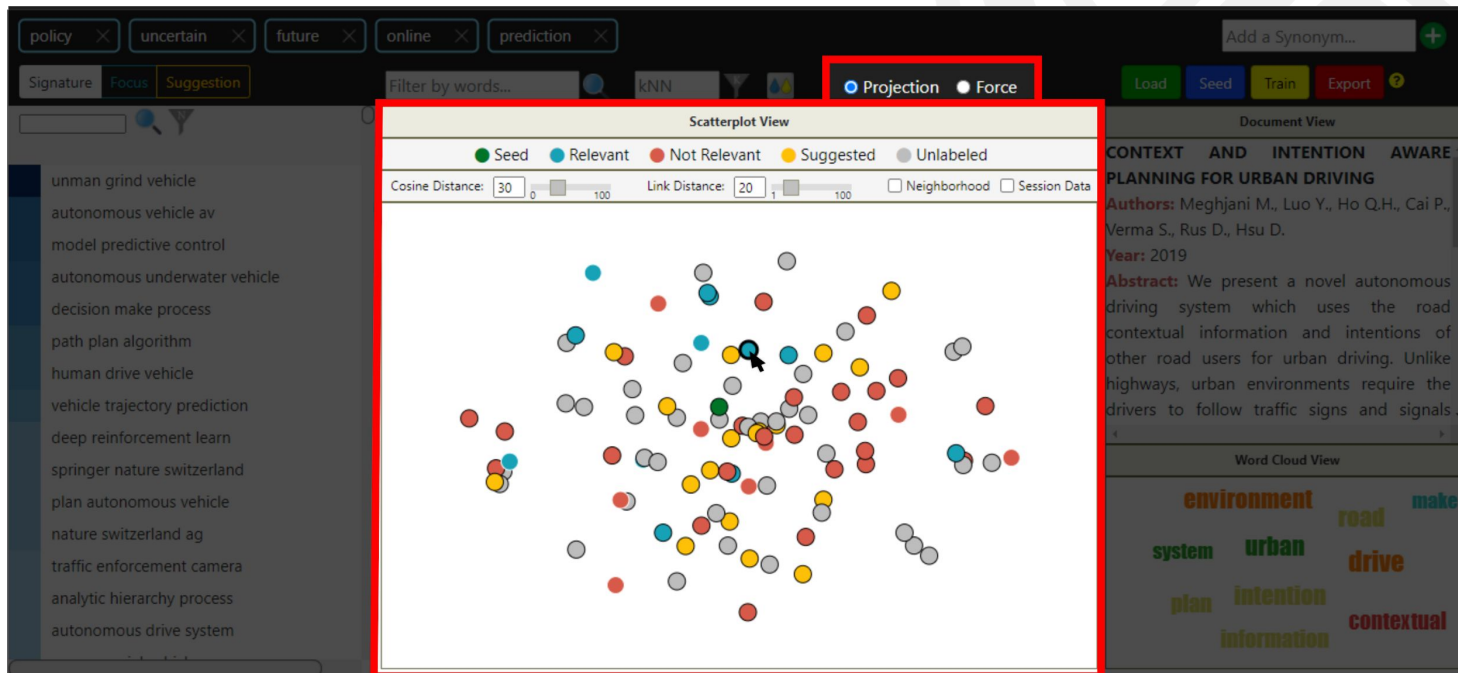


● Seed
● Relevant

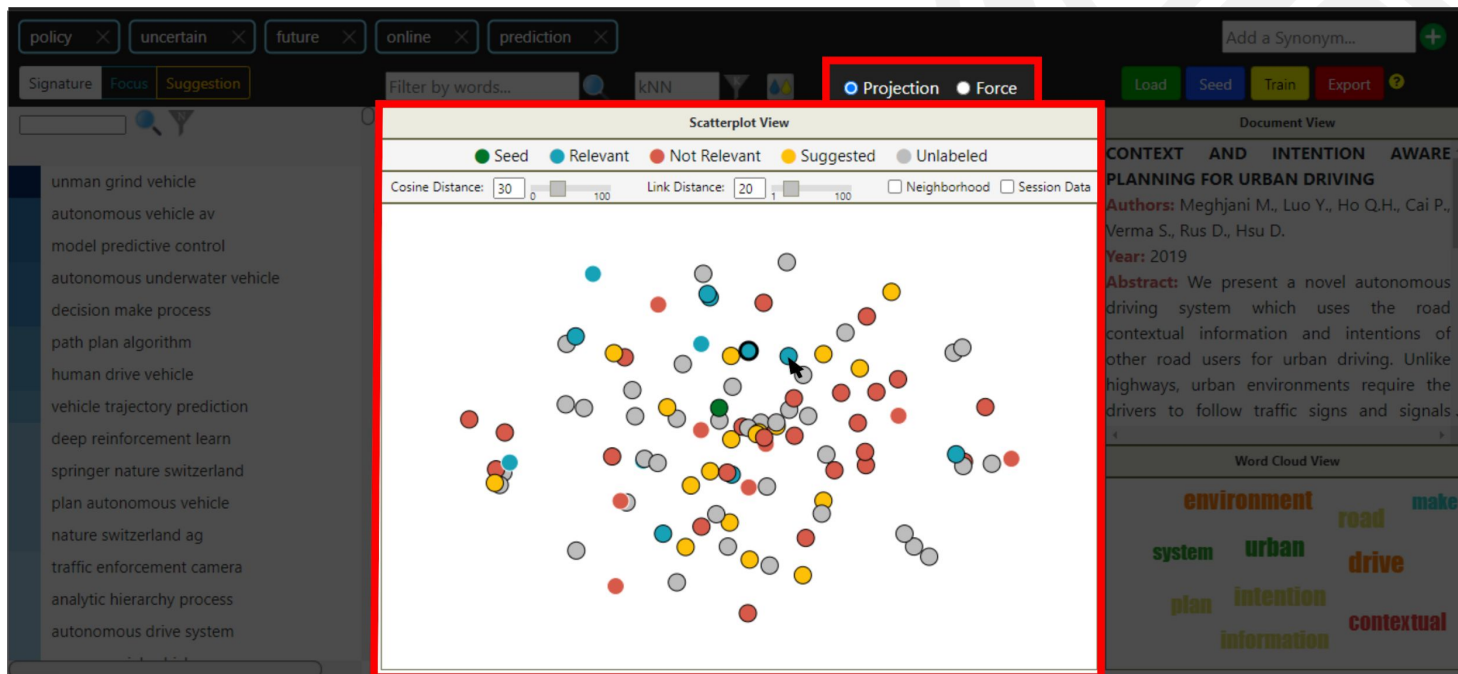
● Not Relevant
● Suggested

● Unlabeled Documents

TRIVIR

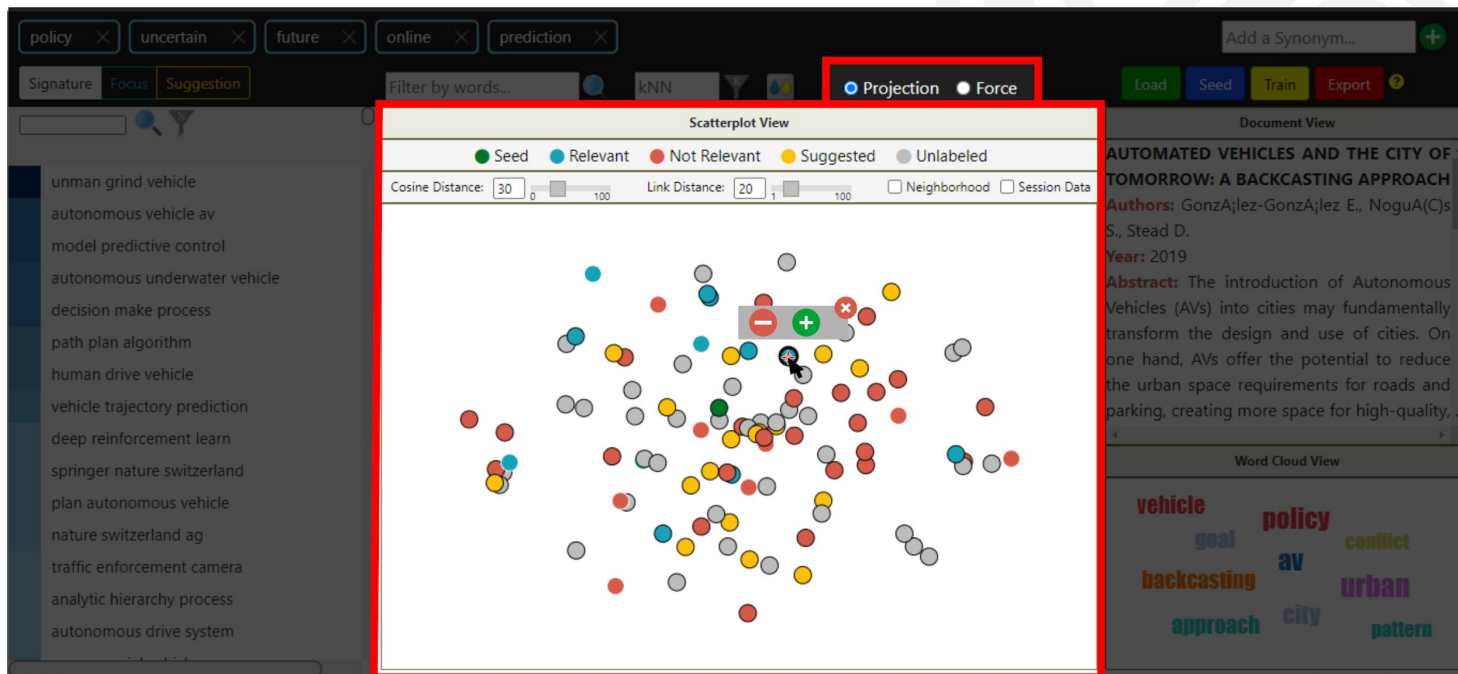


TRIVIR



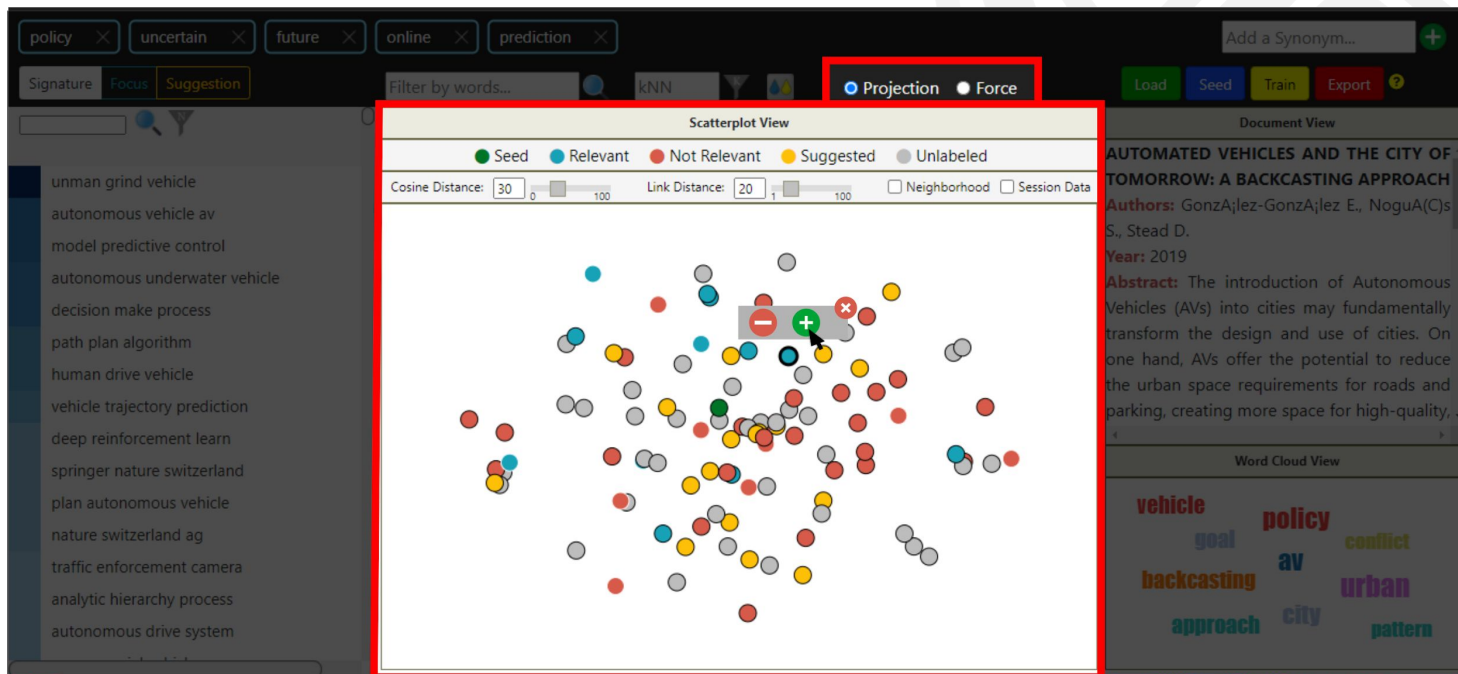
Labeling

TRIVIR



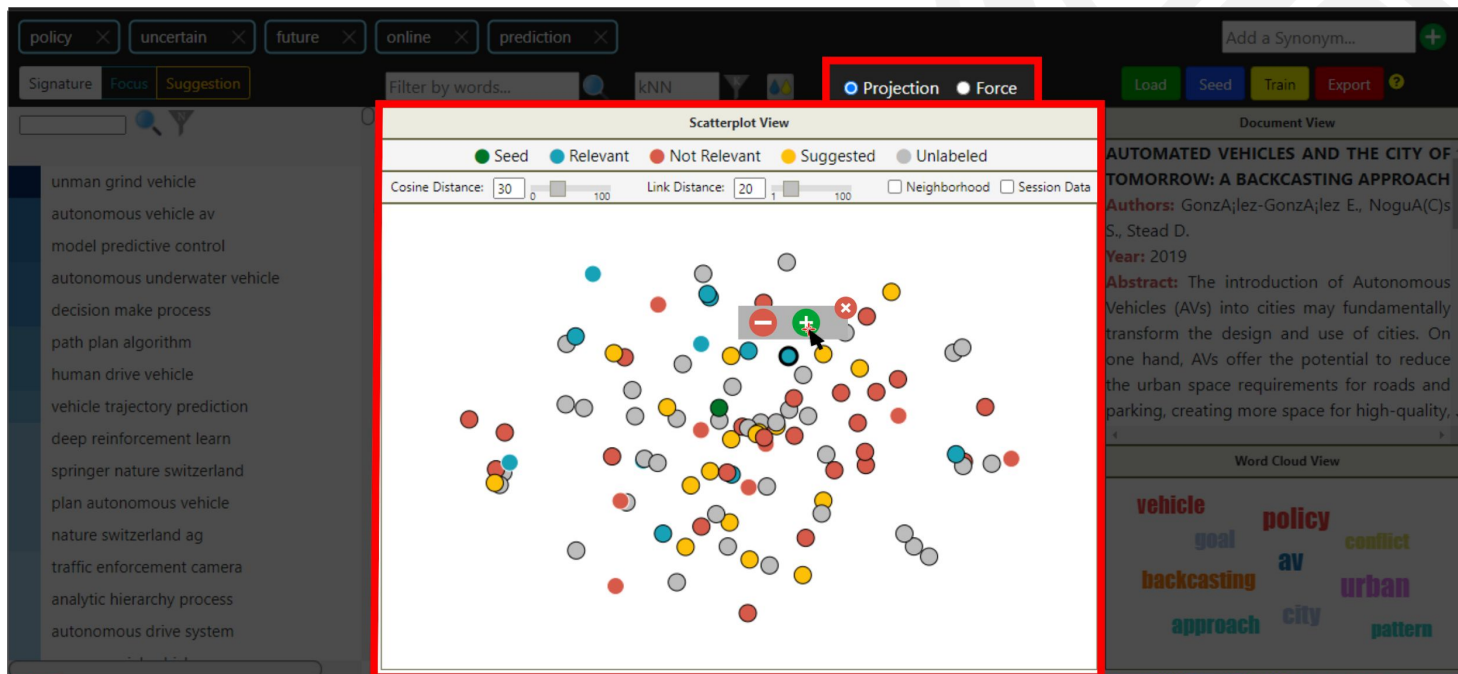
Labeling

TRIVIR



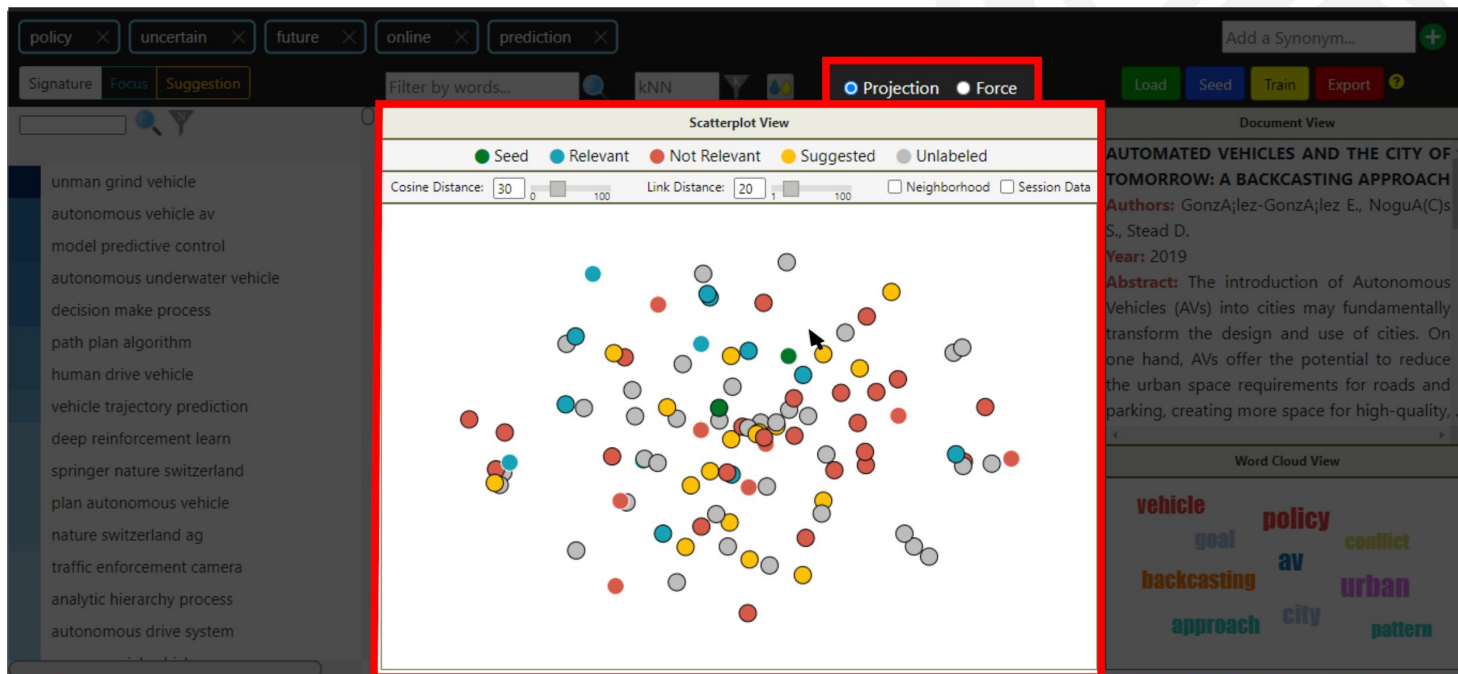
Labeling

TRIVIR



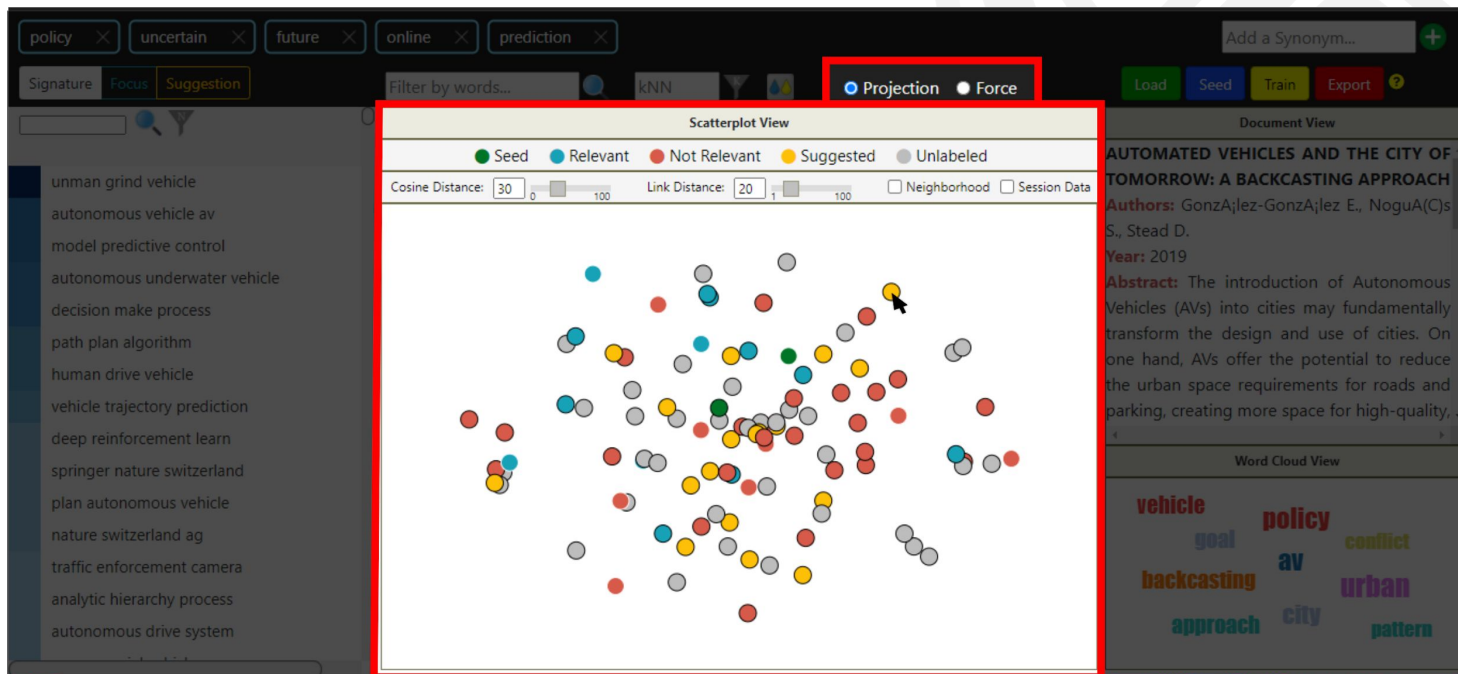
Labeling

TRIVIR



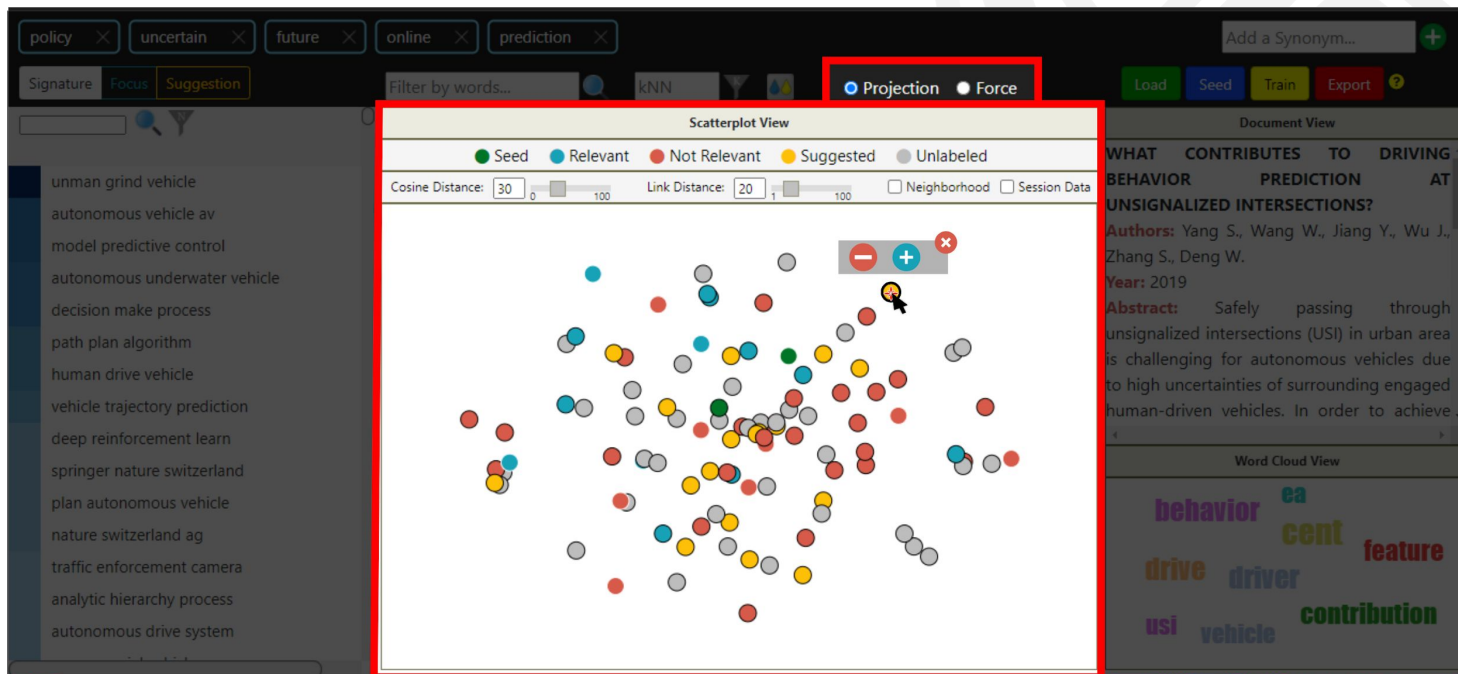
Labeling

TRIVIR



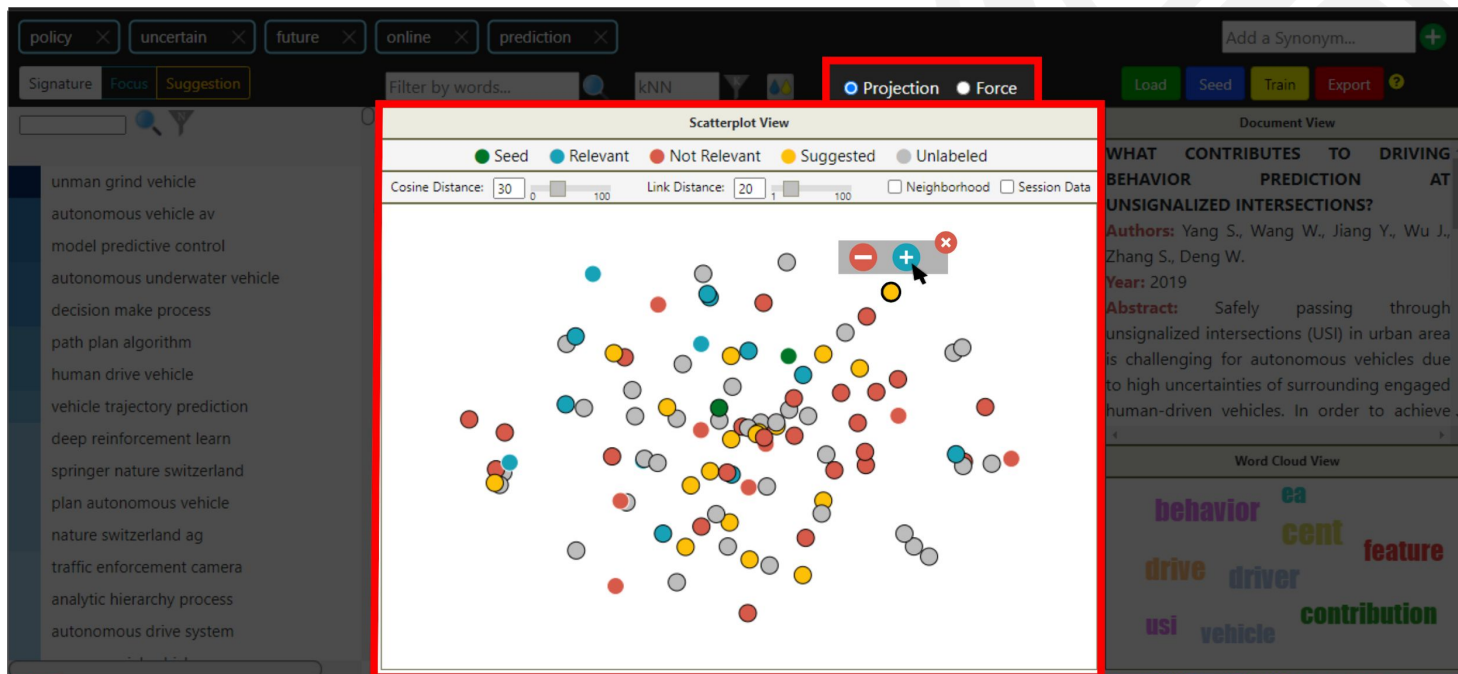
Labeling

TRIVIR



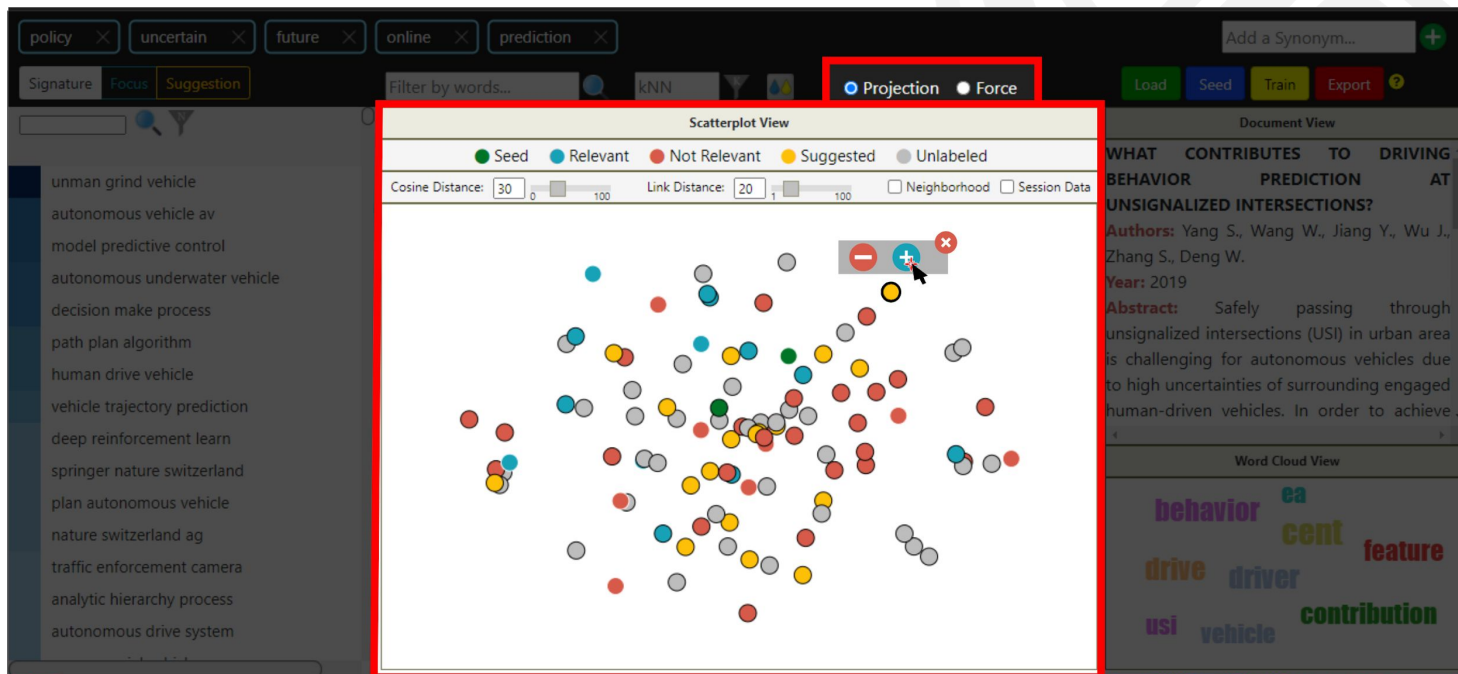
Labeling

TRIVIR



Labeling

TRIVIR



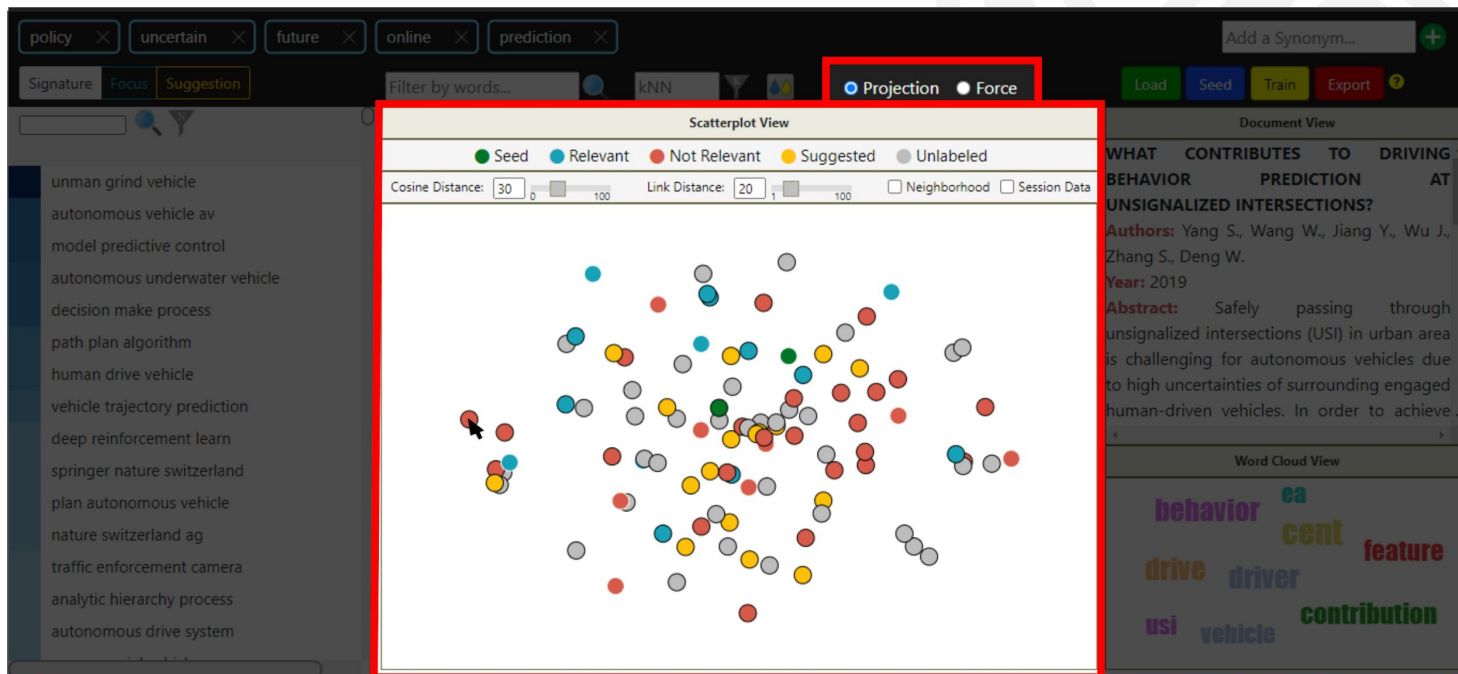
Labeling

TRIVIR



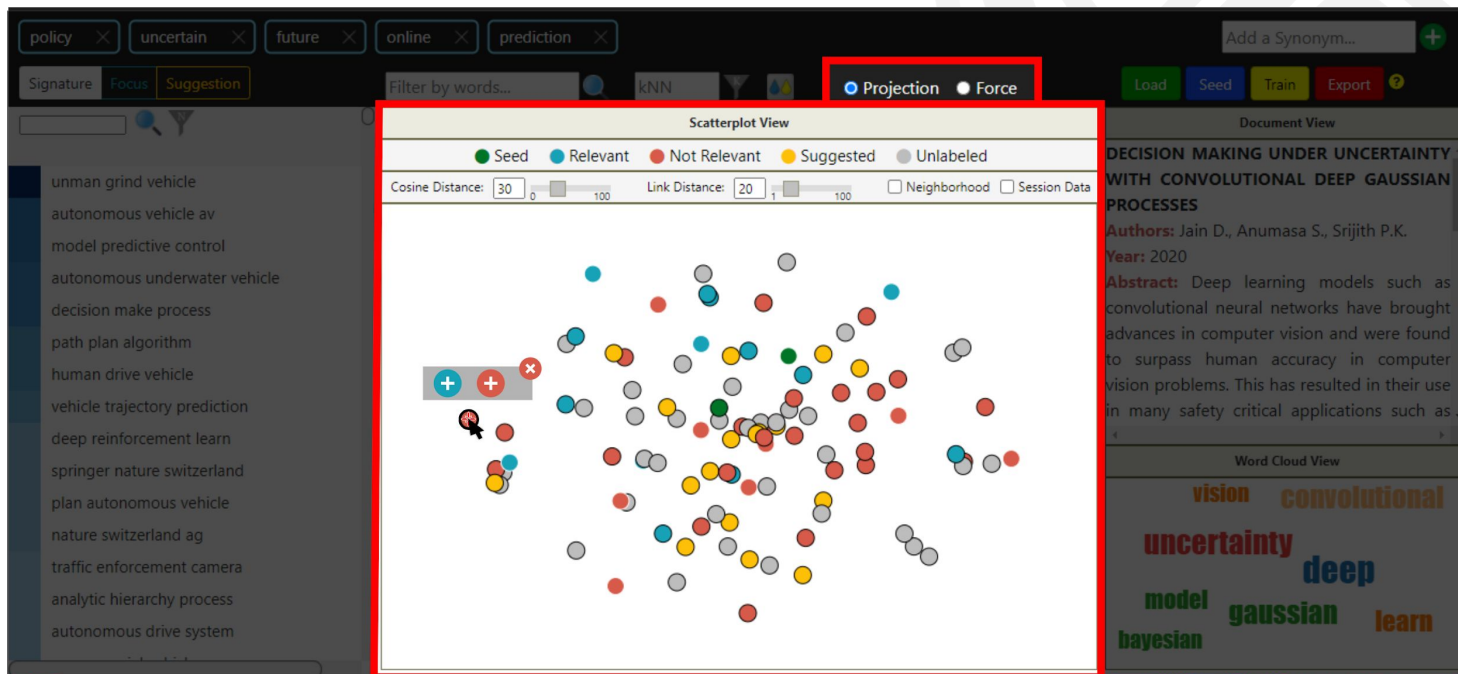
Labeling

TRIVIR



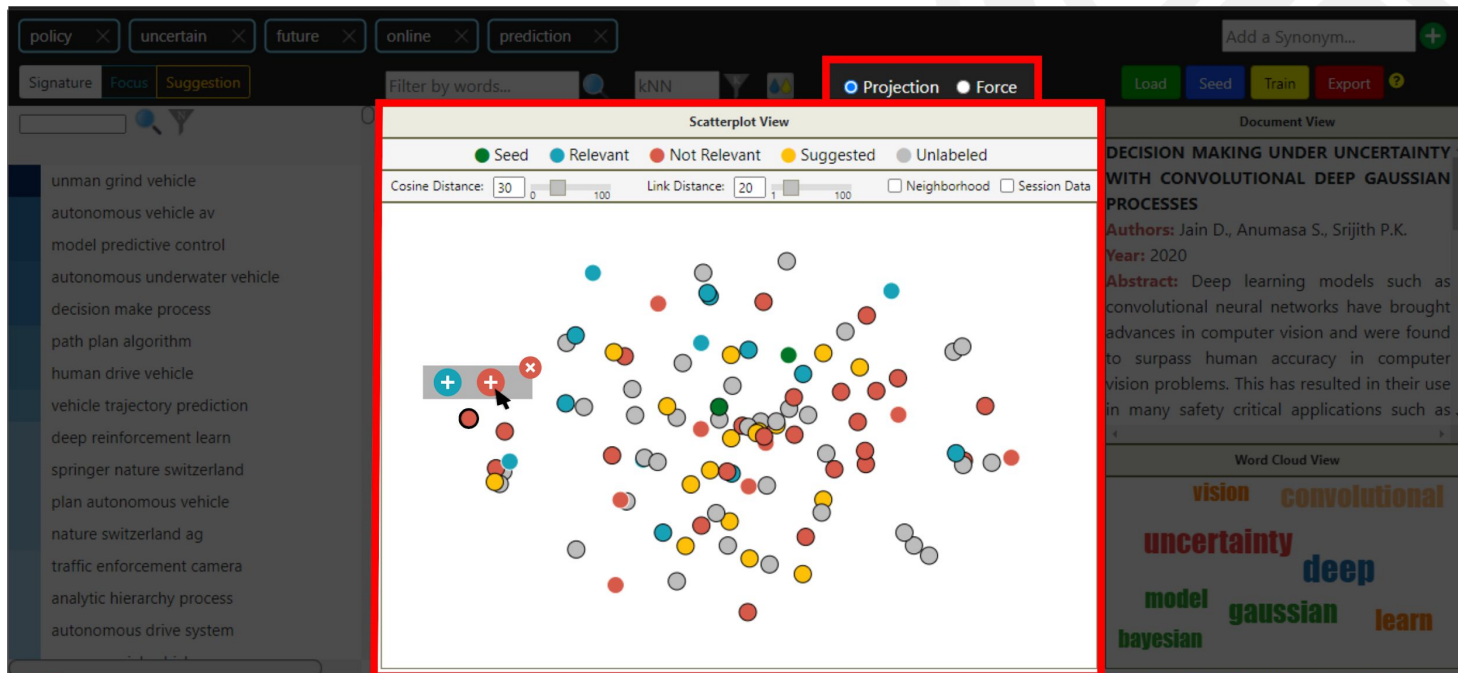
Labeling

TRIVIR



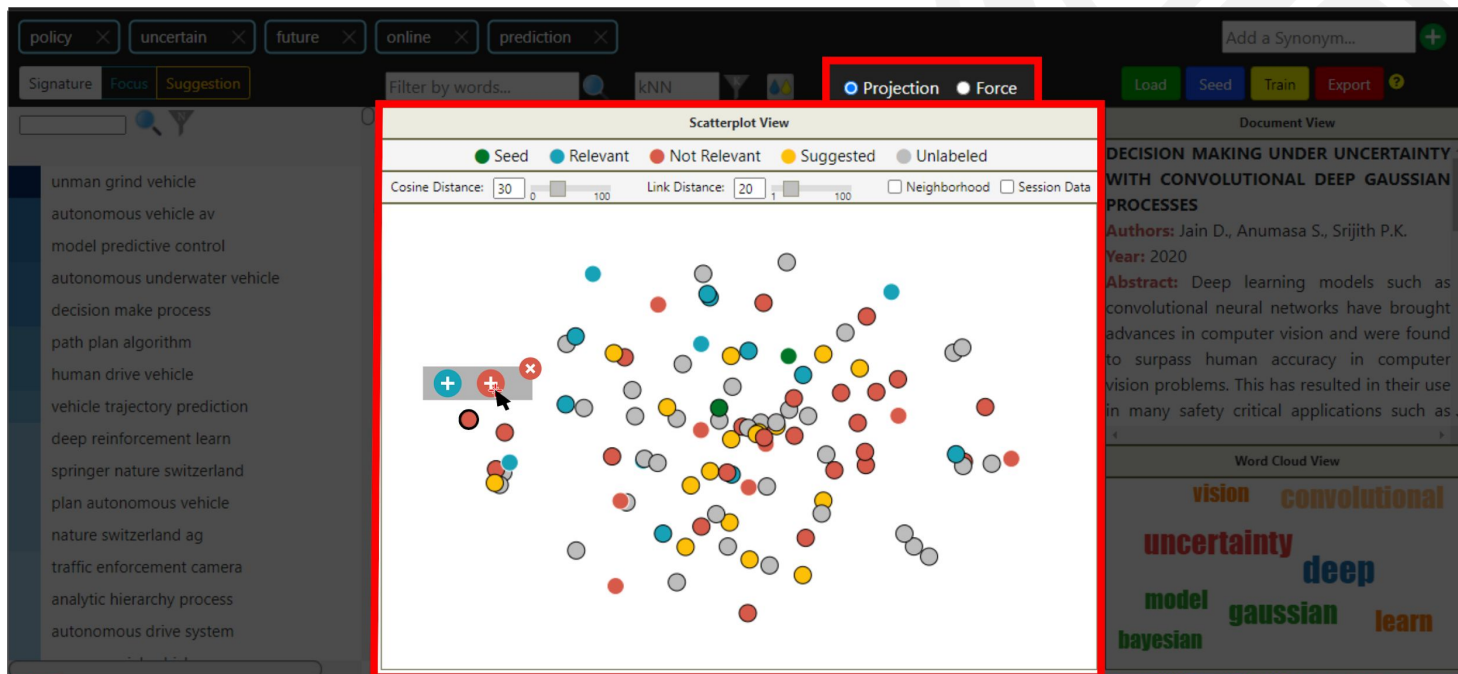
Labeling

TRIVIR



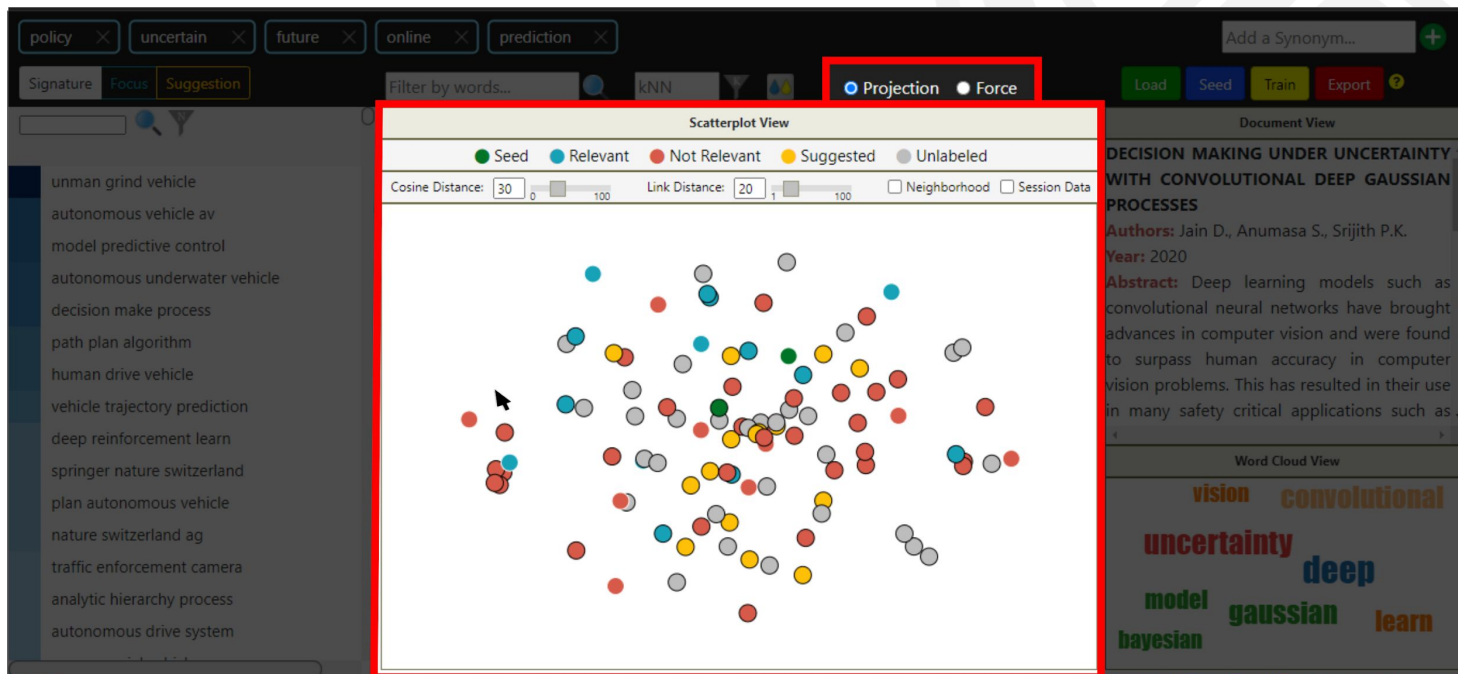
Labeling

TRIVIR



Labeling

TRIVIR



Labeling

TRIVIR

The screenshot displays the TRIVIR interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are buttons for 'Signature', 'Focus', and 'Suggestion'. A search bar labeled 'Filter by words...' is present. The main area is divided into three sections: a list of documents on the left, a central scatterplot, and a document view on the right. The scatterplot is titled 'Scatterplot View' and has a legend with five categories: 'Seed' (green), 'Relevant' (blue), 'Not Relevant' (red), 'Suggested' (yellow), and 'Unlabeled' (grey). The 'Seed' category is selected, and a single green dot is visible in the scatterplot. The scatterplot also includes sliders for 'Cosine Distance' (set to 30) and 'Link Distance' (set to 20), and checkboxes for 'Neighborhood' and 'Session Data'. The document view on the right shows the details for a document titled 'DECISION MAKING UNDER UNCERTAINTY WITH CONVOLUTIONAL DEEP GAUSSIAN PROCESSES' by Jain D., Anumasa S., and Srijith P.K. from 2020. A word cloud below the document view highlights terms like 'vision', 'convolutional', 'uncertainty', 'deep', 'model', 'gaussian', 'learn', and 'bayesian'.

Show Seed documents only

TRIVIR

The screenshot displays the TRIVIR software interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are buttons for 'Signature', 'Focus', and 'Suggestion'. A search bar labeled 'Filter by words...' is present. The main area is divided into three panels:

- Left Panel:** A list of document titles including 'unman grind vehicle', 'autonomous vehicle av', 'model predictive control', 'autonomous underwater vehicle', 'decision make process', 'path plan algorithm', 'human drive vehicle', 'vehicle trajectory prediction', 'deep reinforcement learn', 'springer nature switzerland', 'plan autonomous vehicle', 'nature switzerland ag', 'traffic enforcement camera', 'analytic hierarchy process', and 'autonomous drive system'.
- Center Panel (Scatterplot View):** A plot titled 'Scatterplot View' with a legend for 'Seed' (green dot), 'Relevant' (blue dot), 'Not Relevant' (red dot), 'Suggested' (yellow dot), and 'Unlabeled' (grey dot). It includes sliders for 'Cosine Distance' (set to 30) and 'Link Distance' (set to 20), and checkboxes for 'Neighborhood' and 'Session Data'. Two green dots are visible on the plot, representing 'Seed' documents. A red box highlights the 'Projection' radio button and the 'Scatterplot View' panel.
- Right Panel:** A 'Document View' showing the text of a document titled 'DECISION MAKING UNDER UNCERTAINTY WITH CONVOLUTIONAL DEEP GAUSSIAN PROCESSES'. It lists authors 'Jain D., Anumasa S., Srijith P.K.' and the year '2020'. The abstract discusses deep learning models and their application in safety-critical areas. Below this is a 'Word Cloud View' with terms like 'vision', 'convolutional', 'uncertainty', 'deep', 'model', 'gaussian', 'learn', and 'bayesian'.

Show Seed documents only

TRIVIR

The screenshot displays the TRIVIR interface with several components:

- Top Bar:** Contains tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. A search bar is present with the text 'Add a Synonym...'. Buttons for 'Load', 'Seed', 'Train', and 'Export' are visible.
- Navigation:** Includes 'Signature', 'Focus', and 'Suggestion' tabs. A 'Filter by words...' input field is present.
- Left Panel:** Lists various terms such as 'unman grind vehicle', 'autonomous vehicle av', 'model predictive control', 'autonomous underwater vehicle', 'decision make process', 'path plan algorithm', 'human drive vehicle', 'vehicle trajectory prediction', 'deep reinforcement learn', 'springer nature switzerland', 'plan autonomous vehicle', 'nature switzerland ag', 'traffic enforcement camera', 'analytic hierarchy process', and 'autonomous drive system'.
- Scatterplot View (Center):** A window titled 'Scatterplot View' with a legend for 'Seed' (green), 'Relevant' (blue), 'Not Relevant' (red), 'Suggested' (yellow), and 'Unlabeled' (grey). It includes sliders for 'Cosine Distance' (set to 30) and 'Link Distance' (set to 20), and checkboxes for 'Neighborhood' and 'Session Data'. Two blue dots representing 'Relevant' documents are shown on the plot.
- Right Panel:** Shows a 'Document View' for a paper titled 'DECISION MAKING UNDER UNCERTAINTY WITH CONVOLUTIONAL DEEP GAUSSIAN PROCESSES'. It lists authors (Jain D., Anumasa S., Srijith P.K.), the year (2020), and an abstract. Below this is a 'Word Cloud View' with terms like 'vision', 'convolutional', 'uncertainty', 'deep', 'model', 'gaussian', 'learn', and 'bayesian'.

Show Relevant documents only

TRIVIR

The screenshot displays the TRIVIR interface with several components:

- Top Bar:** Contains search filters for 'policy', 'uncertain', 'future', 'online', and 'prediction'. It also features a 'Filter by words...' input field and a 'kNN' dropdown menu.
- Navigation:** Includes tabs for 'Signature', 'Focus', and 'Suggestion'. A 'Projection' radio button is selected and highlighted with a red box.
- Scatterplot View:** A central window showing a scatterplot of document clusters. The legend includes 'Seed' (green), 'Relevant' (blue), 'Not Relevant' (red), 'Suggested' (yellow), and 'Unlabeled' (grey). A red box highlights the 'Relevant' label. The plot shows approximately 12 blue dots representing relevant documents. Below the plot are sliders for 'Cosine Distance' (set to 30) and 'Link Distance' (set to 20), along with checkboxes for 'Neighborhood' and 'Session Data'.
- Document View:** On the right, it displays the details of a selected document: 'DECISION MAKING UNDER UNCERTAINTY WITH CONVOLUTIONAL DEEP GAUSSIAN PROCESSES' by Jain D., Anumasa S., and Sriji P.K. (2020). The abstract discusses deep learning models in computer vision.
- Word Cloud View:** Below the document view, a word cloud highlights terms like 'vision', 'convolutional', 'uncertainty', 'deep', 'model', 'gaussian', 'learn', and 'bayesian'.
- Left Panel:** A list of related terms such as 'unman grind vehicle', 'autonomous vehicle av', 'model predictive control', 'autonomous underwater vehicle', 'decision make process', 'path plan algorithm', 'human drive vehicle', 'vehicle trajectory prediction', 'deep reinforcement learn', 'springer nature switzerland', 'plan autonomous vehicle', 'nature switzerland ag', 'traffic enforcement camera', 'analytic hierarchy process', and 'autonomous drive system'.

Show Relevant documents only

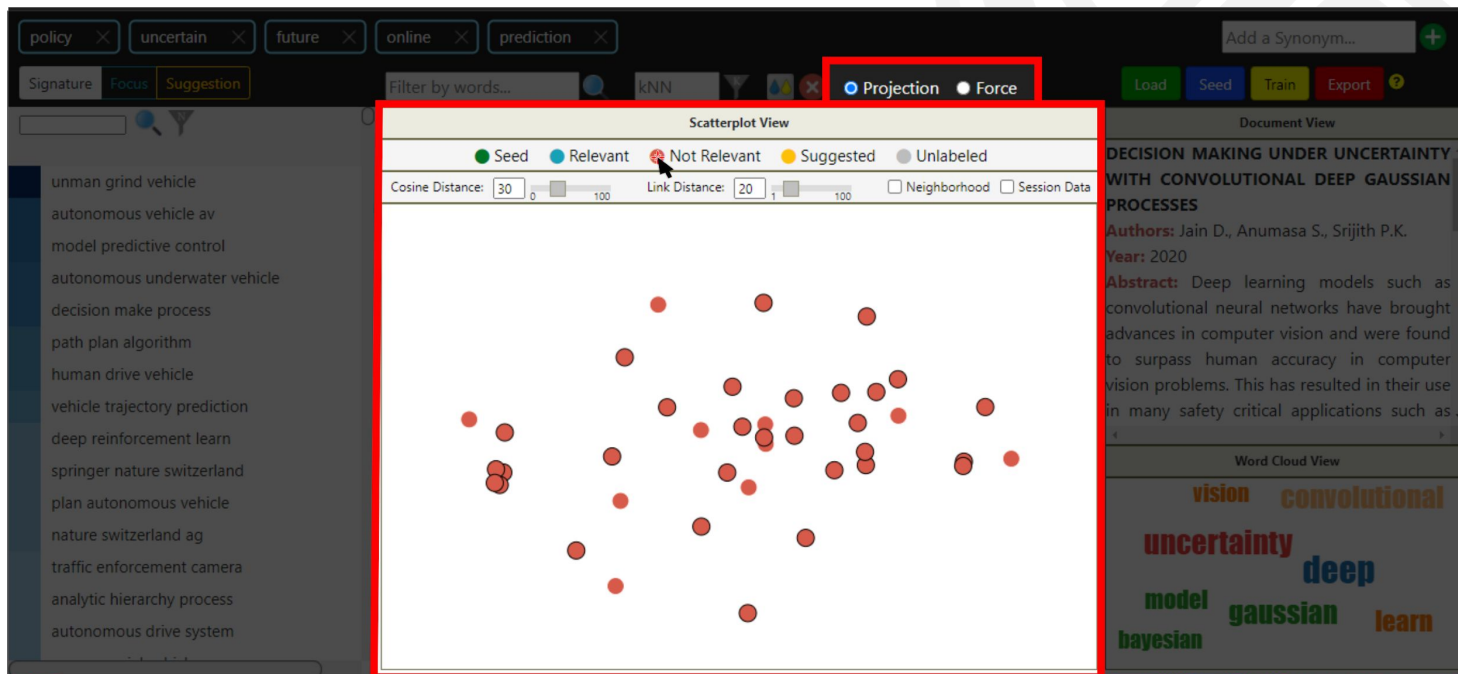
TRIVIR

The screenshot displays the TRIVIR interface with several components:

- Top Bar:** Contains search filters for "policy", "uncertain", "future", "online", and "prediction". It also features a "Filter by words..." input field and a "kNN" dropdown menu.
- Navigation:** Includes tabs for "Signature", "Focus", and "Suggestion".
- Scatterplot View (highlighted in red):** Shows a visualization of document relevance. The legend includes "Seed" (green), "Relevant" (blue), "Not Relevant" (red), "Suggested" (yellow), and "Unlabeled" (grey). The plot area contains several blue dots representing relevant documents. A red box highlights the "Projection" and "Force" radio buttons, with "Projection" being selected.
- Document View:** Displays the details of a selected document titled "DECISION MAKING UNDER UNCERTAINTY WITH CONVOLUTIONAL DEEP GAUSSIAN PROCESSES". It lists authors (Jain D., Anumasa S., Sriji P.K.), the year (2020), and an abstract discussing deep learning models in computer vision.
- Word Cloud View:** Shows a word cloud with terms like "vision", "convolutional", "uncertainty", "deep", "model", "gaussian", "learn", and "bayesian".

Show Not Relevant documents only

TRIVIR



Show Not Relevant documents only

TRIVIR

The screenshot displays the TRIVIR interface with several components:

- Top Bar:** Contains tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are 'Signature', 'Focus', and 'Suggestion' tabs. A search bar 'Filter by words...' is present, along with a 'kNN' dropdown and radio buttons for 'Projection' (selected) and 'Force'.
- Left Panel:** A list of terms including 'unman grind vehicle', 'autonomous vehicle av', 'model predictive control', 'autonomous underwater vehicle', 'decision make process', 'path plan algorithm', 'human drive vehicle', 'vehicle trajectory prediction', 'deep reinforcement learn', 'springer nature switzerland', 'plan autonomous vehicle', 'nature switzerland ag', 'traffic enforcement camera', 'analytic hierarchy process', and 'autonomous drive system'.
- Scatterplot View (Center):** A window titled 'Scatterplot View' with a legend: 'Seed' (green), 'Relevant' (blue), 'Not Relevant' (red), 'Suggested' (yellow), and 'Unlabeled' (grey). It includes sliders for 'Cosine Distance' (set to 30) and 'Link Distance' (set to 20), and checkboxes for 'Neighborhood' and 'Session Data'. The plot shows a cluster of red dots ('Not Relevant') and a few yellow dots ('Suggested').
- Right Panel:** A 'Document View' showing a document titled 'DECISION MAKING UNDER UNCERTAINTY WITH CONVOLUTIONAL DEEP GAUSSIAN PROCESSES' by Jain D., Anumasa S., and Srijith P.K. (2020). Below it is a 'Word Cloud View' with terms like 'vision', 'convolutional', 'uncertainty', 'deep', 'model', 'gaussian', 'learn', and 'bayesian'.

Show Suggested documents only

TRIVIR

The screenshot displays the TRIVIR interface with several components:

- Top Bar:** Contains tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are 'Signature', 'Focus', and 'Suggestion' buttons. A search bar 'Filter by words...' is present, along with a 'kNN' dropdown and radio buttons for 'Projection' (selected) and 'Force'.
- Left Panel:** A list of document titles including 'unman grind vehicle', 'autonomous vehicle av', 'model predictive control', 'autonomous underwater vehicle', 'decision make process', 'path plan algorithm', 'human drive vehicle', 'vehicle trajectory prediction', 'deep reinforcement learn', 'springer nature switzerland', 'plan autonomous vehicle', 'nature switzerland ag', 'traffic enforcement camera', 'analytic hierarchy process', and 'autonomous drive system'.
- Scatterplot View (Center):** A window titled 'Scatterplot View' with a legend for 'Seed' (green), 'Relevant' (blue), 'Not Relevant' (red), 'Suggested' (yellow), and 'Unlabeled' (grey). It includes sliders for 'Cosine Distance' (set to 30) and 'Link Distance' (set to 20), and checkboxes for 'Neighborhood' and 'Session Data'. The plot shows a cluster of yellow 'Suggested' documents.
- Right Panel:** A 'Document View' for the document 'DECISION MAKING UNDER UNCERTAINTY WITH CONVOLUTIONAL DEEP GAUSSIAN PROCESSES'. It lists authors (Jain D., Anumasa S., Srijith P.K.), year (2020), and an abstract. Below is a 'Word Cloud View' with terms like 'vision', 'convolutional', 'uncertainty', 'deep', 'model', 'gaussian', 'learn', and 'bayesian'.

Show Suggested documents only

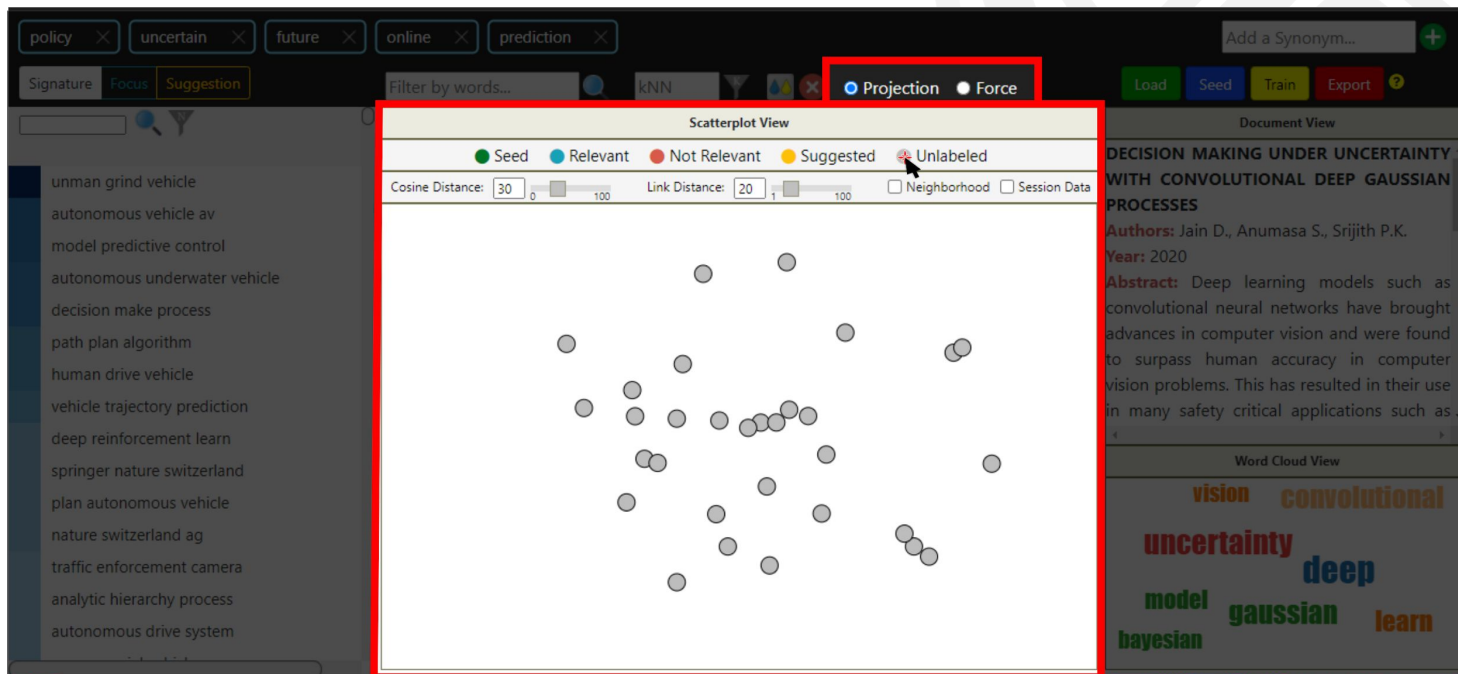
TRIVIR

The screenshot displays the TRIVIR interface with several components:

- Top Bar:** Contains tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are 'Signature', 'Focus', and 'Suggestion' buttons. A search bar 'Filter by words...' is present, along with a 'kNN' dropdown and radio buttons for 'Projection' (selected) and 'Force'.
- Left Panel:** A list of document titles including 'unman grind vehicle', 'autonomous vehicle av', 'model predictive control', 'autonomous underwater vehicle', 'decision make process', 'path plan algorithm', 'human drive vehicle', 'vehicle trajectory prediction', 'deep reinforcement learn', 'springer nature switzerland', 'plan autonomous vehicle', 'nature switzerland ag', 'traffic enforcement camera', 'analytic hierarchy process', and 'autonomous drive system'.
- Scatterplot View (Center):** A window titled 'Scatterplot View' with a legend for 'Seed' (green), 'Relevant' (blue), 'Not Relevant' (red), 'Suggested' (yellow), and 'Unlabeled' (grey). Below the legend are sliders for 'Cosine Distance' (set to 30) and 'Link Distance' (set to 20), and checkboxes for 'Neighborhood' and 'Session Data'. The plot shows a cluster of yellow 'Suggested' points.
- Right Panel:** A 'Document View' showing the title 'DECISION MAKING UNDER UNCERTAINTY WITH CONVOLUTIONAL DEEP GAUSSIAN PROCESSES', authors 'Jain D., Anumasa S., Srijith P.K.', year '2020', and an abstract. Below it is a 'Word Cloud View' with terms like 'vision', 'convolutional', 'uncertainty', 'deep', 'model', 'gaussian', 'learn', and 'bayesian'.

Show Unlabeled documents only

TRIVIR



Show Unlabeled documents only

TRIVIR

The screenshot displays the TRIVIR interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are 'Signature', 'Focus', and 'Suggestion' tabs. A search bar 'Filter by words...' is present. A red box highlights the 'Projection' button in the top navigation bar, which is currently selected. Below this, a 'Scatterplot View' window is open, showing a scatterplot of data points. The legend indicates: Seed (green), Relevant (blue), Not Relevant (red), Suggested (yellow), and Unlabeled (grey). The plot shows several grey 'Unlabeled' points. Below the legend, there are sliders for 'Cosine Distance' (set to 30) and 'Link Distance' (set to 20), and checkboxes for 'Neighborhood' and 'Session Data'. To the right of the scatterplot, the 'Document View' shows a document titled 'DECISION MAKING UNDER UNCERTAINTY WITH CONVOLUTIONAL DEEP GAUSSIAN PROCESSES' by Jain D., Anumasa S., and Srijith P.K. (2020). Below the document view is a 'Word Cloud View' with terms like 'vision', 'convolutional', 'uncertainty', 'deep', 'model', 'gaussian', 'learn', and 'bayesian'.

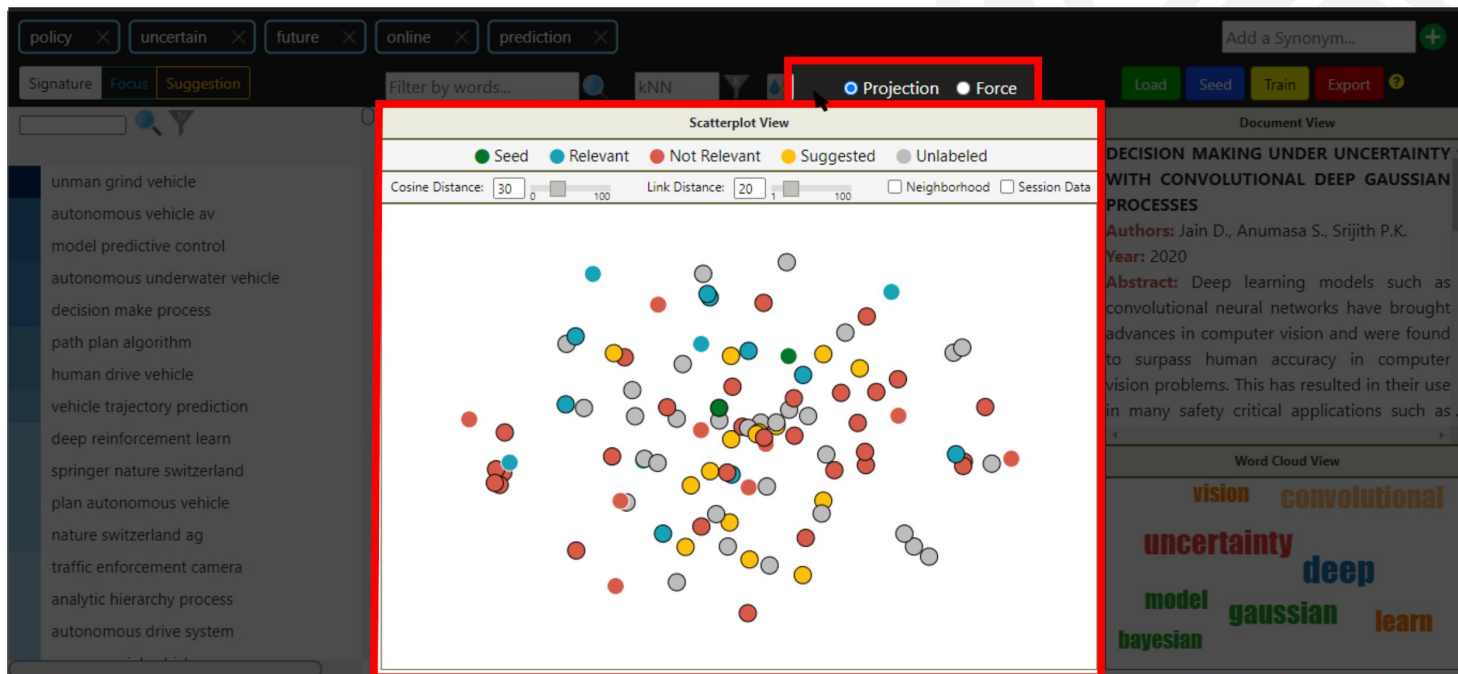
Clear selected filters

TRIVIR

The screenshot displays the TRIVIR interface. At the top, there are filter tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are tabs for 'Signature', 'Focus', and 'Suggestion'. A search bar labeled 'Filter by words...' is present. The main area is divided into three sections: a list of terms on the left, a central 'Scatterplot View', and a 'Document View' on the right. The 'Scatterplot View' is highlighted with a red border and contains a legend with five categories: Seed (green), Relevant (blue), Not Relevant (red), Suggested (yellow), and Unlabeled (grey). It also features sliders for 'Cosine Distance' (set to 30) and 'Link Distance' (set to 20), along with checkboxes for 'Neighborhood' and 'Session Data'. The 'Document View' shows a document titled 'DECISION MAKING UNDER UNCERTAINTY WITH CONVOLUTIONAL DEEP GAUSSIAN PROCESSES' by Jain D., Anumasa S., and Srijith P.K. from 2020. Below the document is a 'Word Cloud View' with terms like 'vision', 'convolutional', 'uncertainty', 'deep', 'model', 'gaussian', 'learn', and 'bayesian'. A red box highlights the 'Projection' and 'Force' buttons in the top right of the scatterplot view.

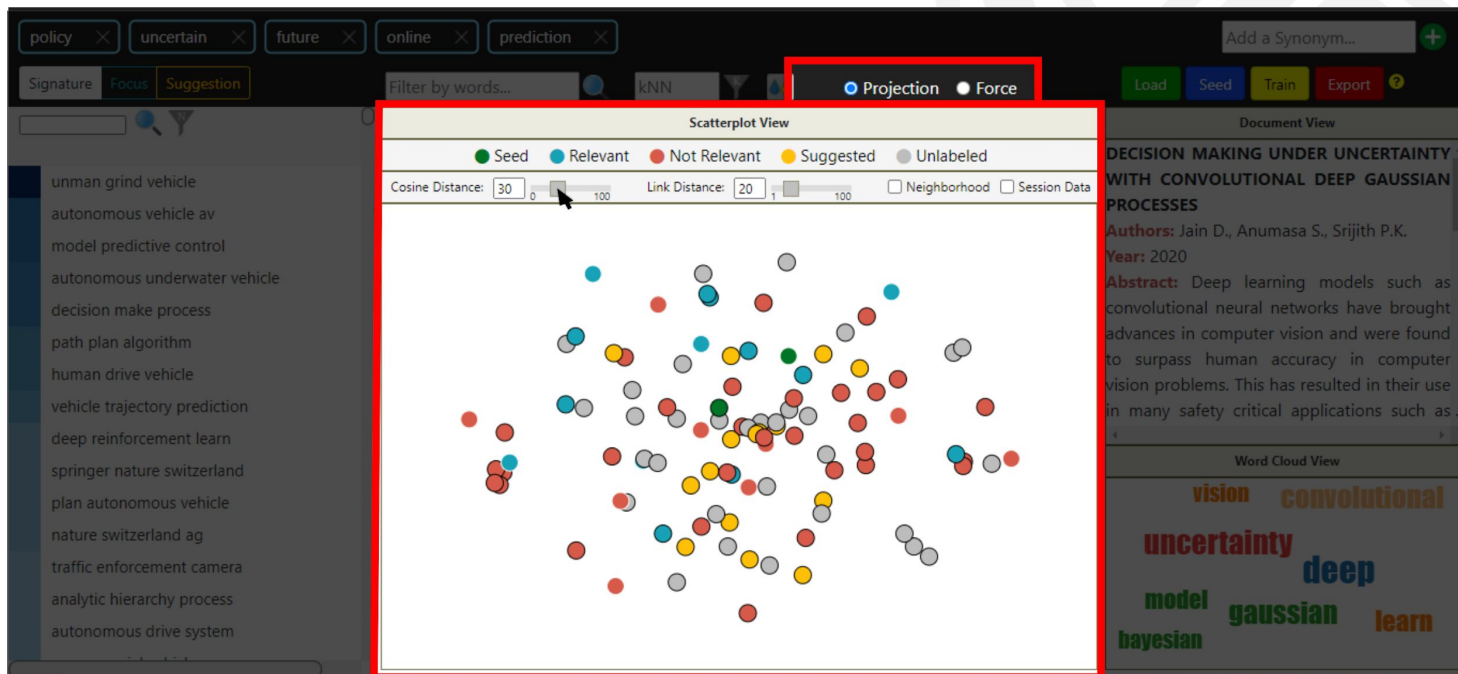
Clear selected filters

TRIVIR



Clear selected filters

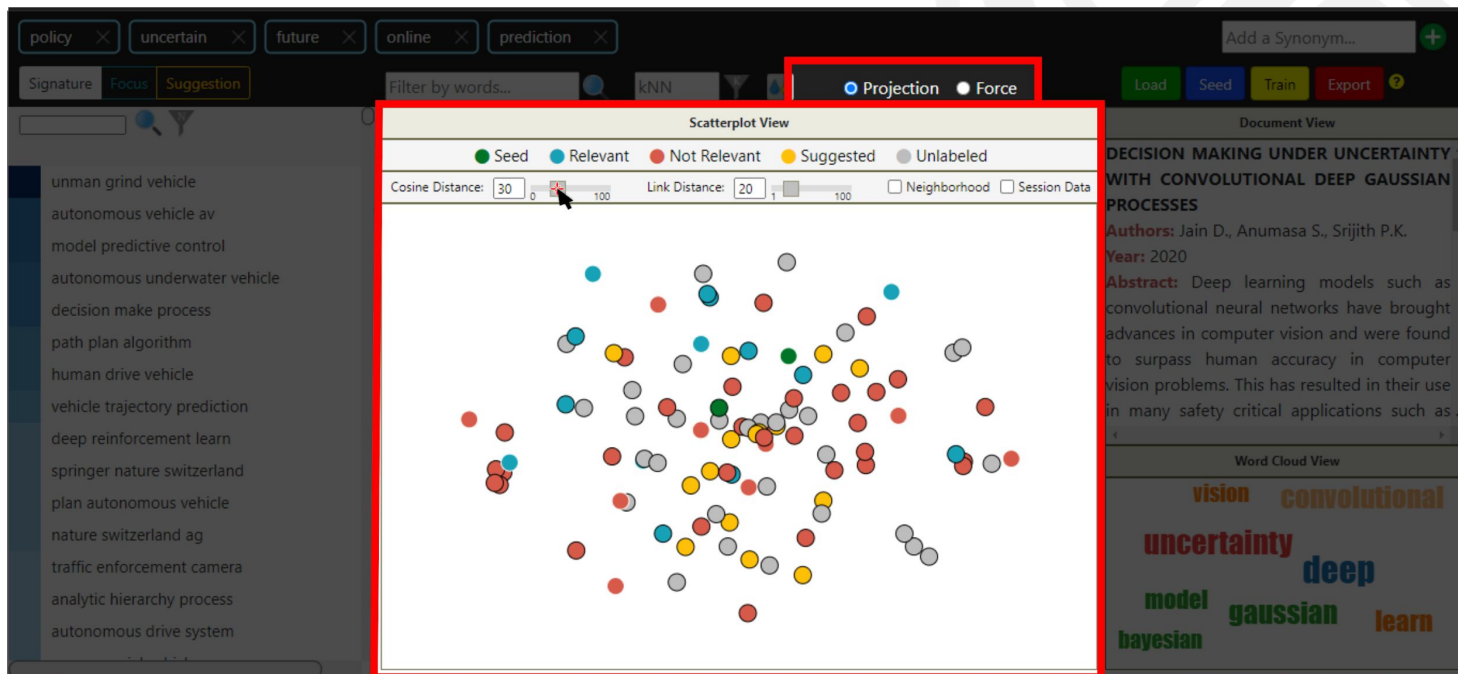
TRIVIR



Parameters

Cosine Distance: as the value increases, the documents connected are less similar.

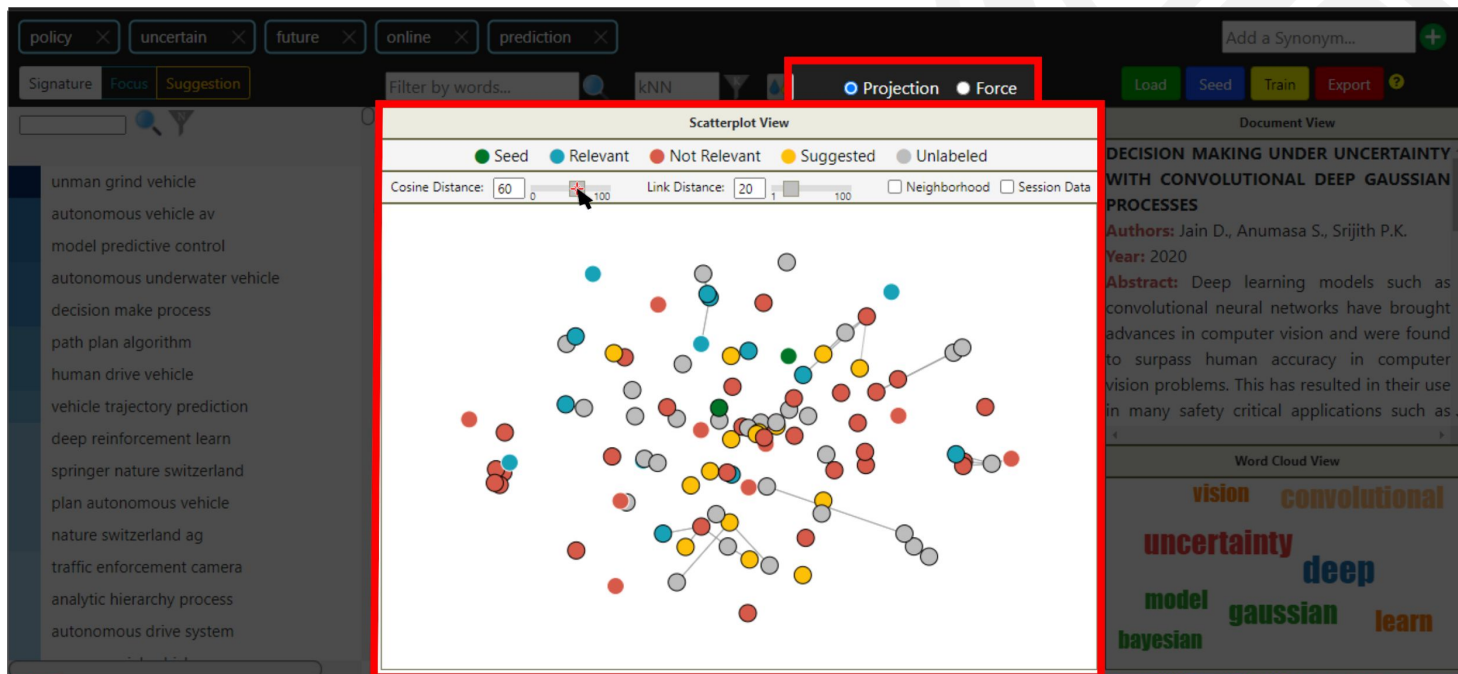
TRIVIR



Parameters

Cosine Distance: as the value increases, the documents connected are less similar.

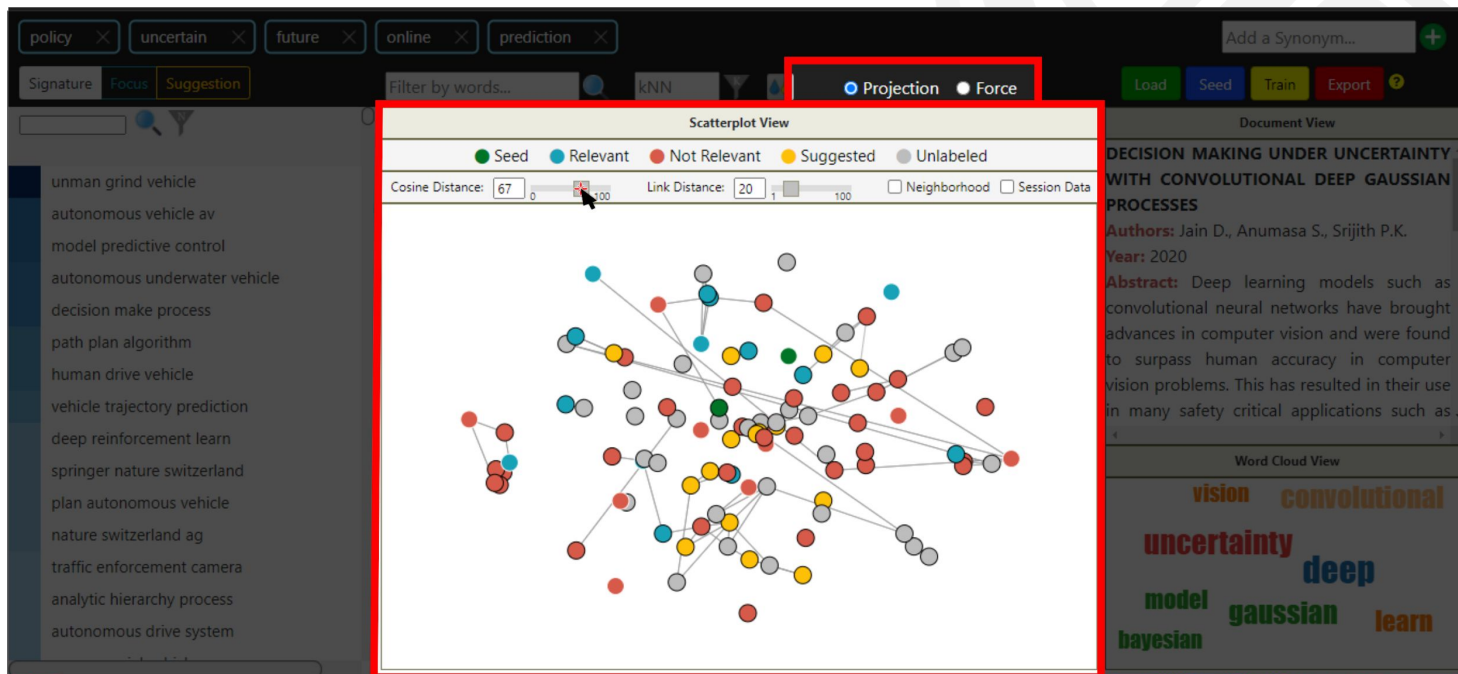
TRIVIR



Parameters

Cosine Distance: as the value increases, the documents connected are less similar.

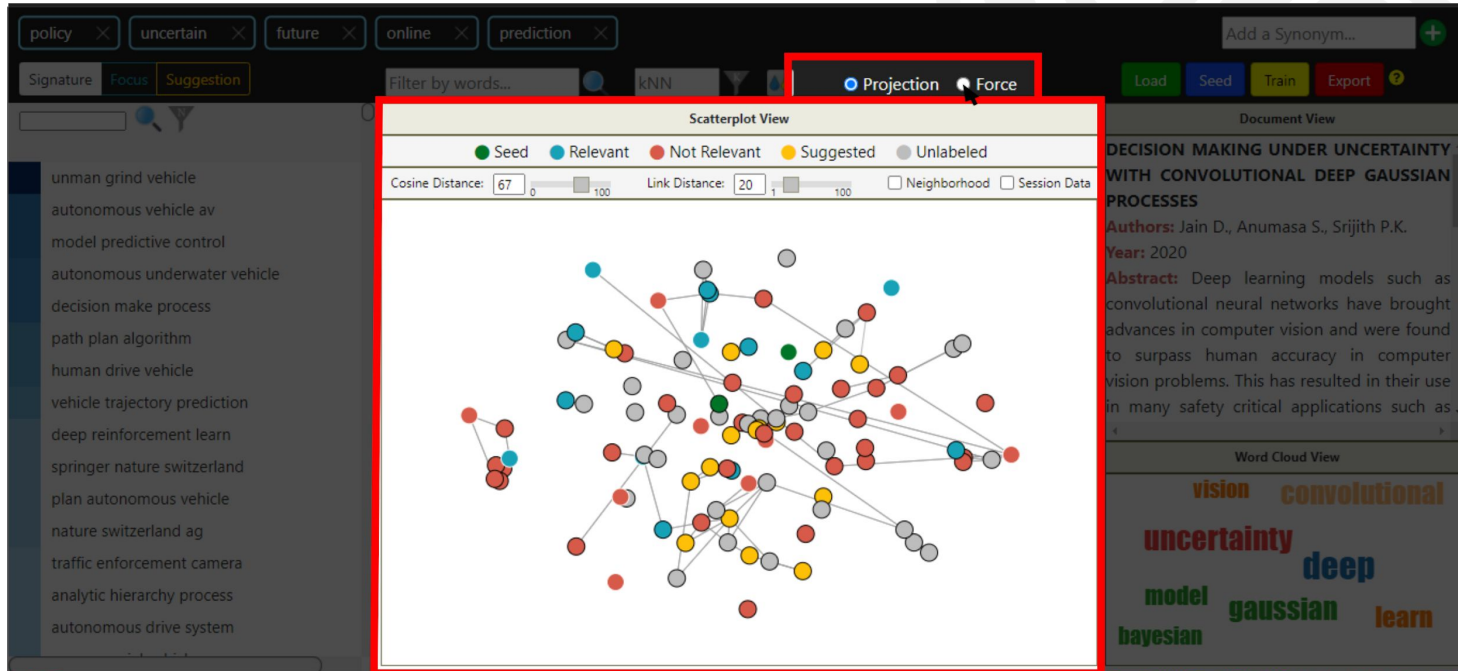
TRIVIR



Parameters

Cosine Distance: as the value increases, the documents connected are less similar.

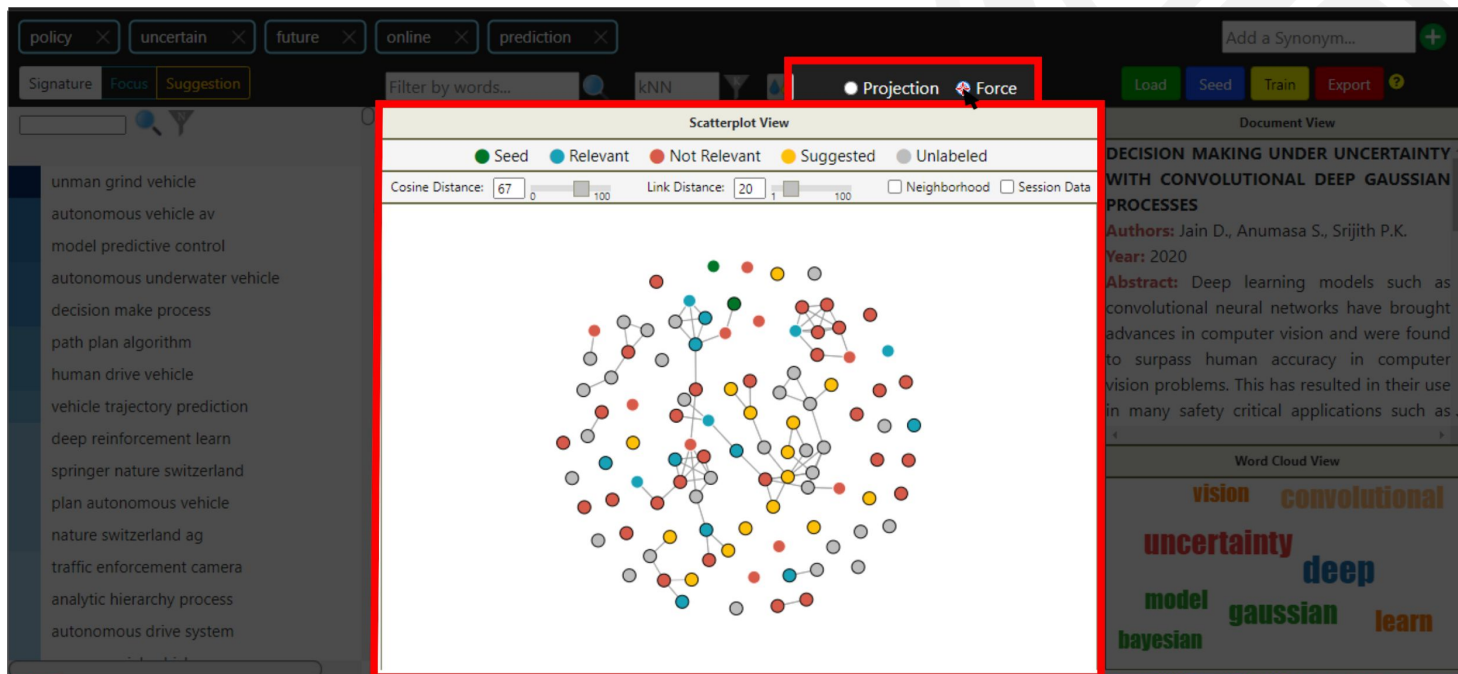
TRIVIR



Visualization Techniques

Projection: the placement of the circles is computed with a Multidimensional Projection technique.

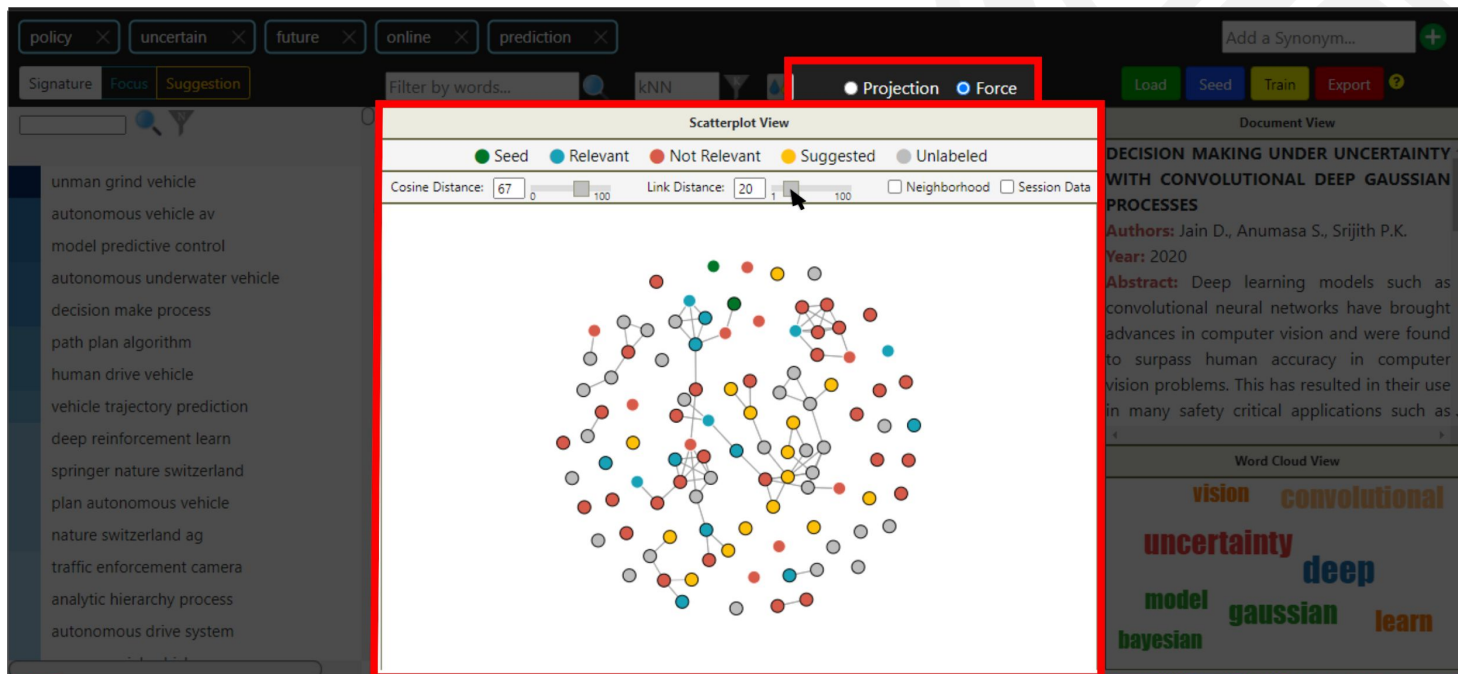
TRIVIR



Visualization Techniques

Force: the placement of the circles is computed with a Force-Layout technique.

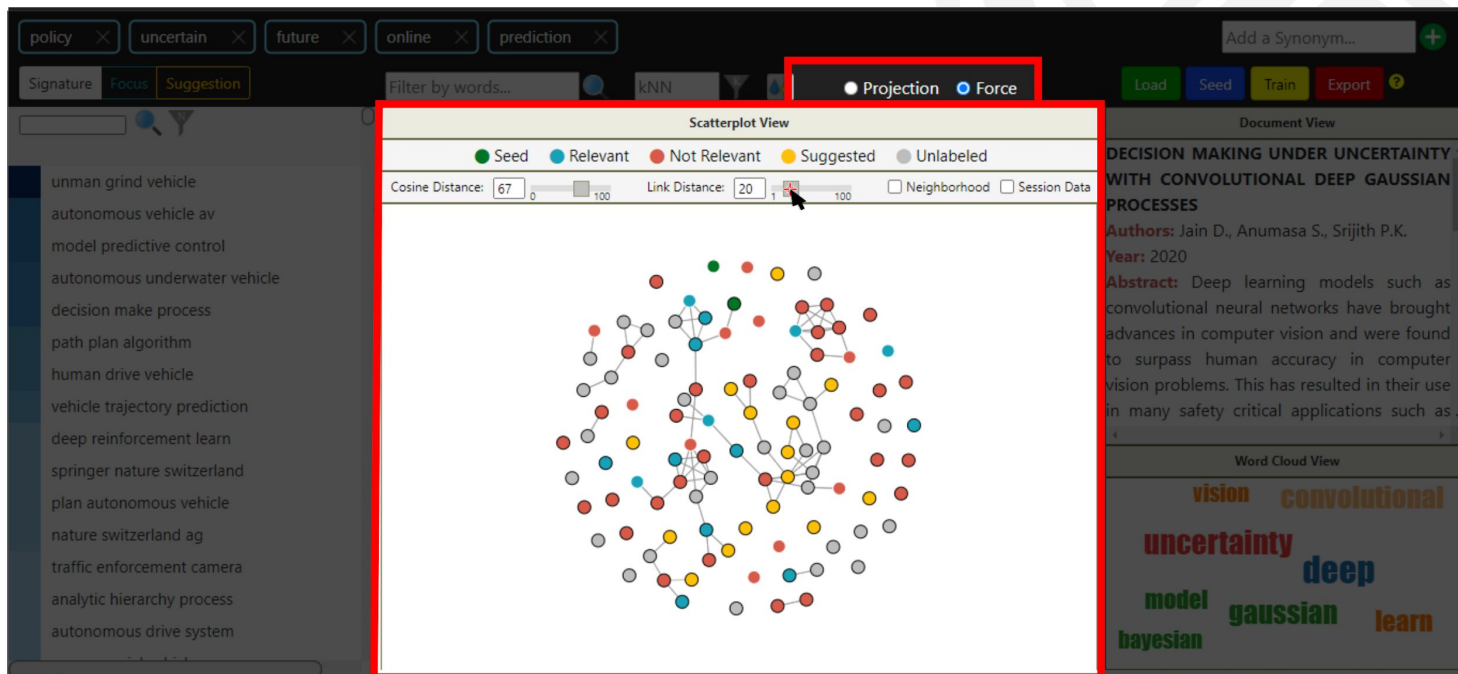
TRIVIR



Parameters

Link Distance: the length of the links.

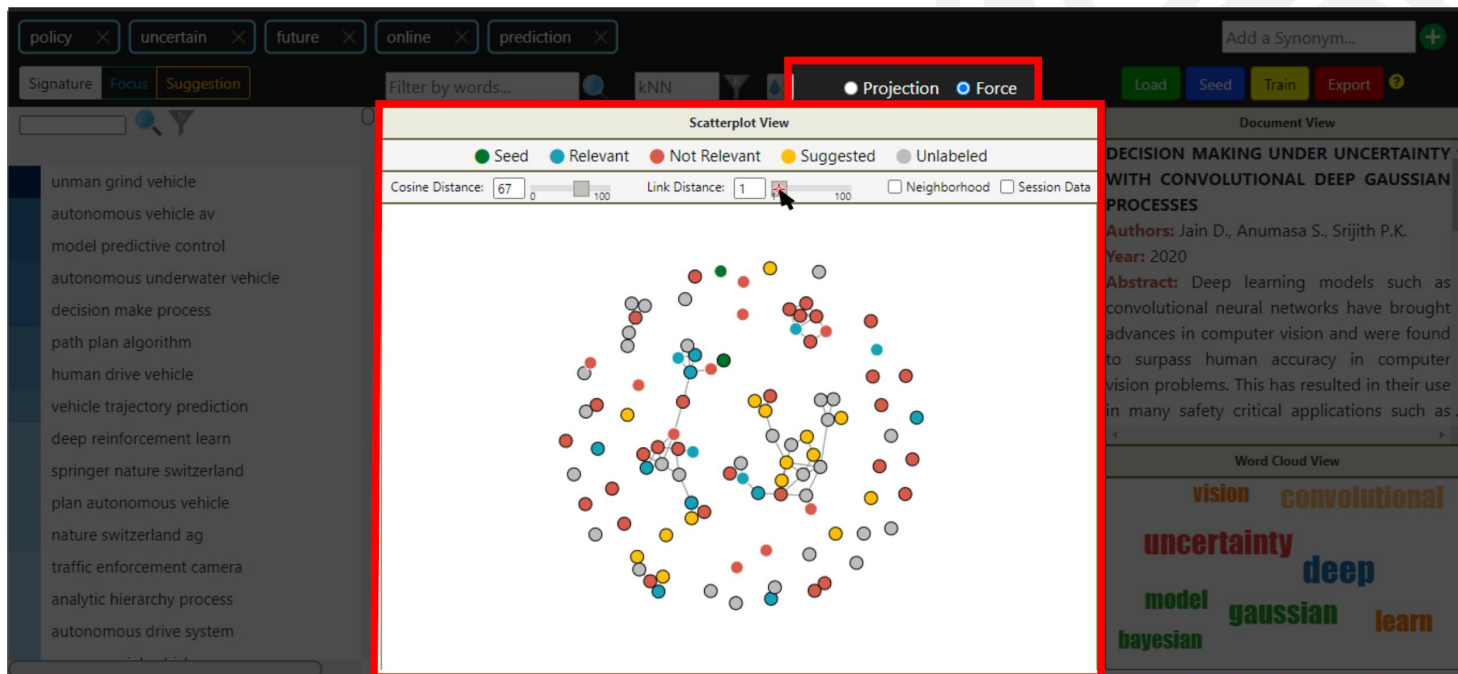
TRIVIR



Parameters

Link Distance: bring similar closer/move similar farther.

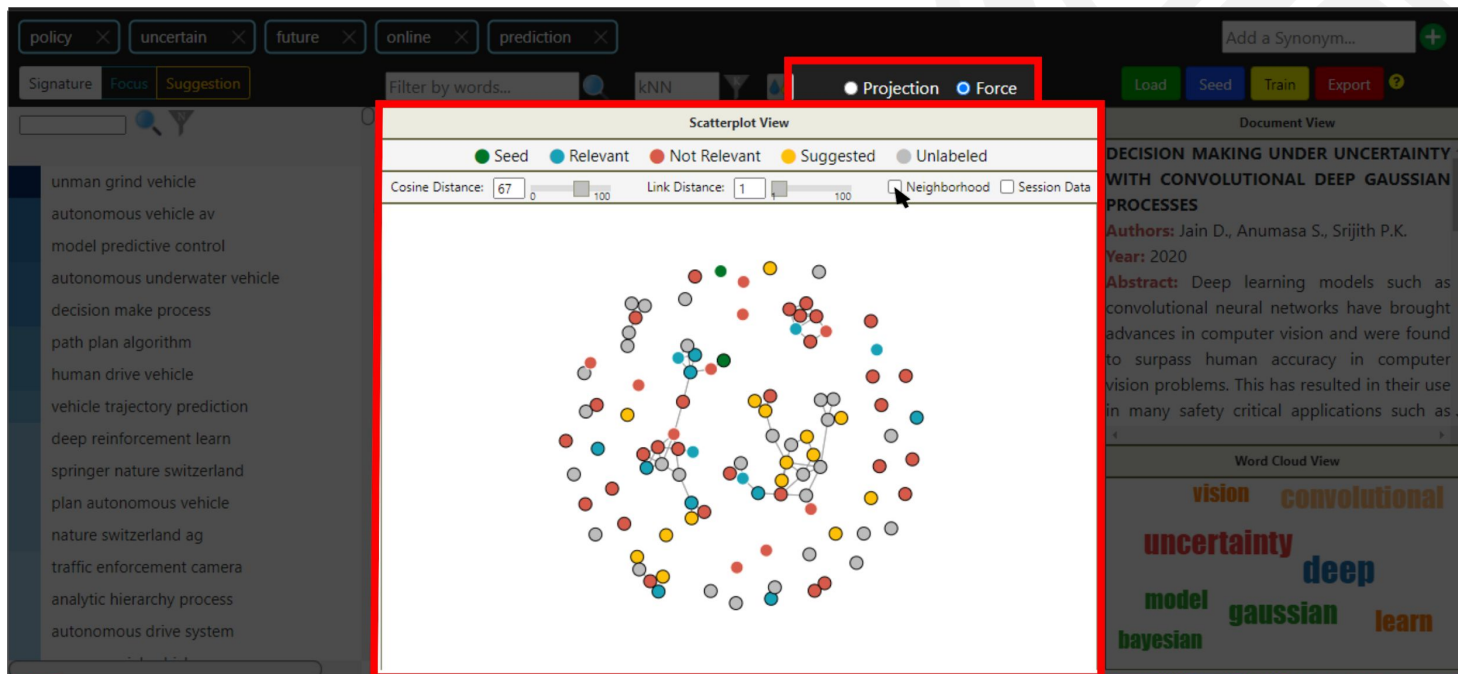
TRIVIR



Parameters

Link Distance: bring similar closer/move similar farther.

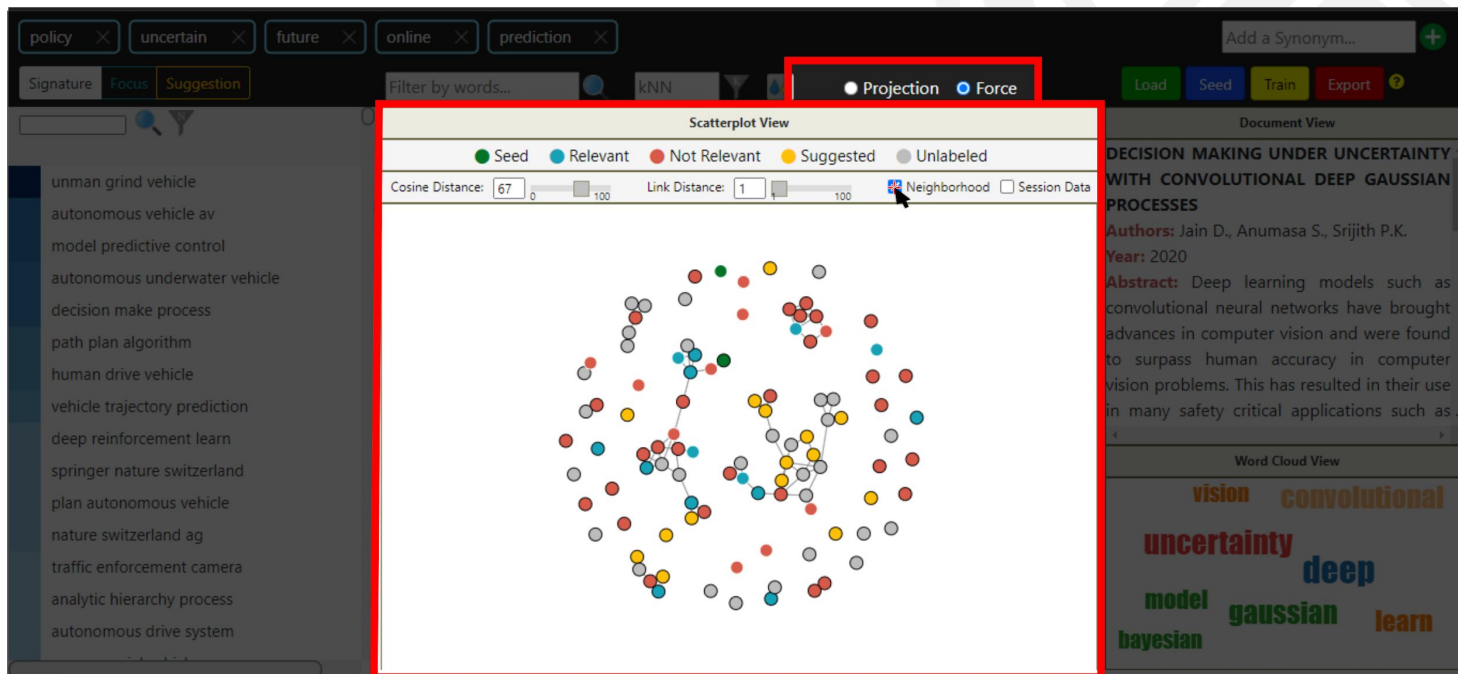
TRIVIR



Parameters

Neighborhood: Represents the 'closeness' between documents.

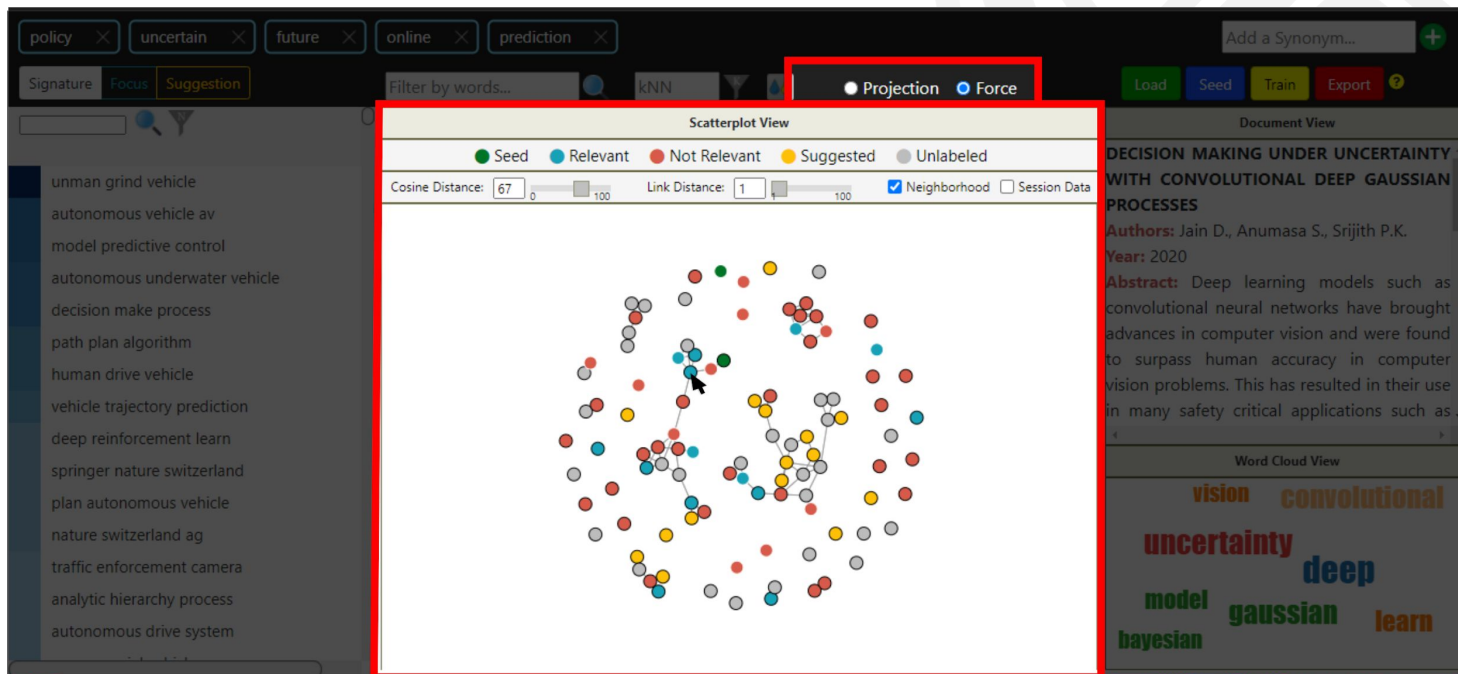
TRIVIR



Parameters

Neighborhood: Show 'closest neighbors' to a document, i.e., its most similar documents.

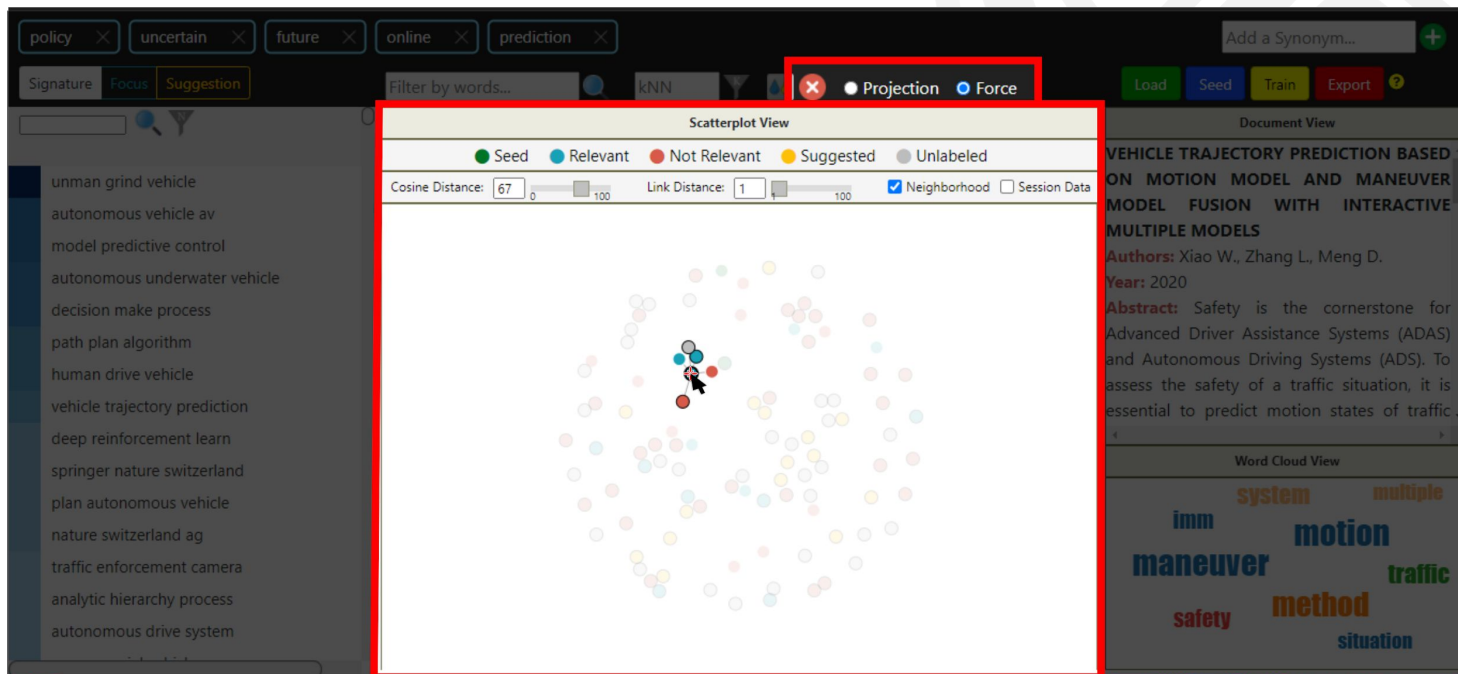
TRIVIR



Parameters

Neighborhood: Show 'closest neighbors' to a document, i.e., its most similar documents.

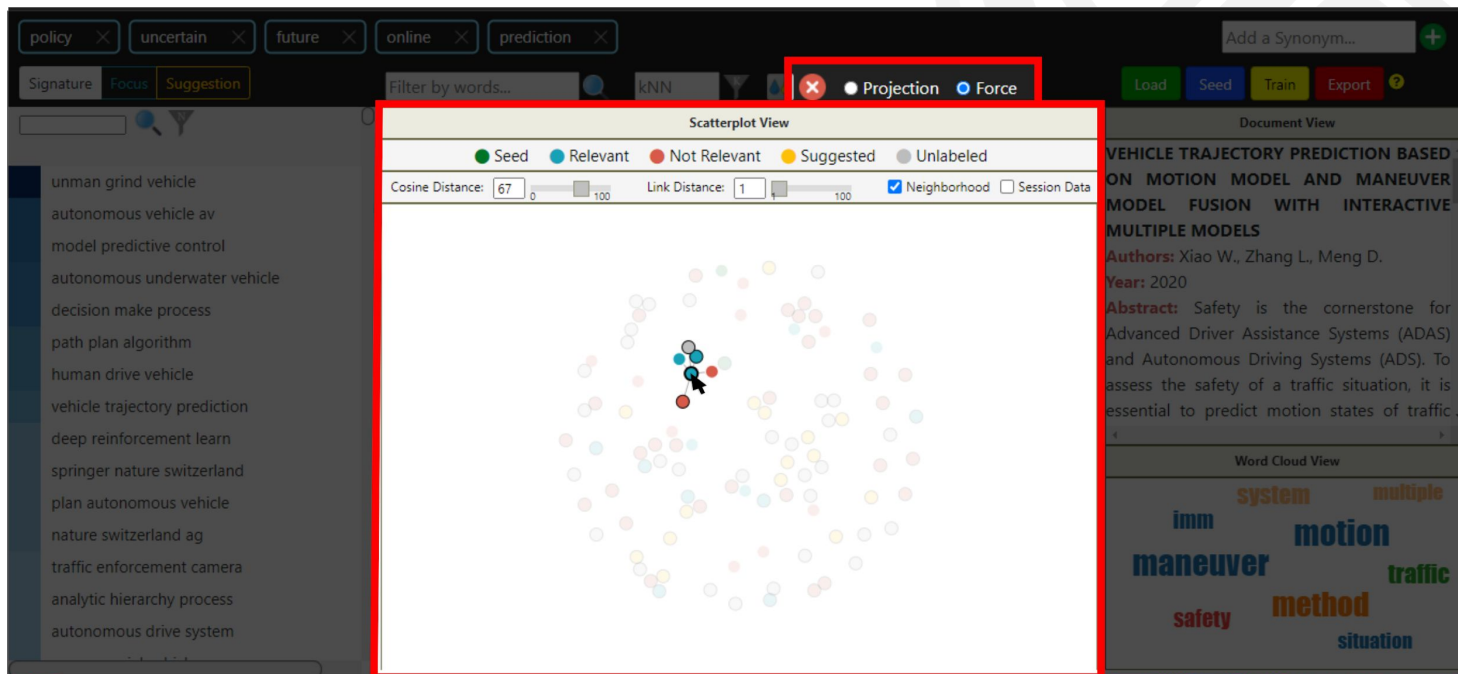
TRIVIR



Parameters

Neighborhood: Show 'closest neighbors' to a document, i.e., its most similar documents.

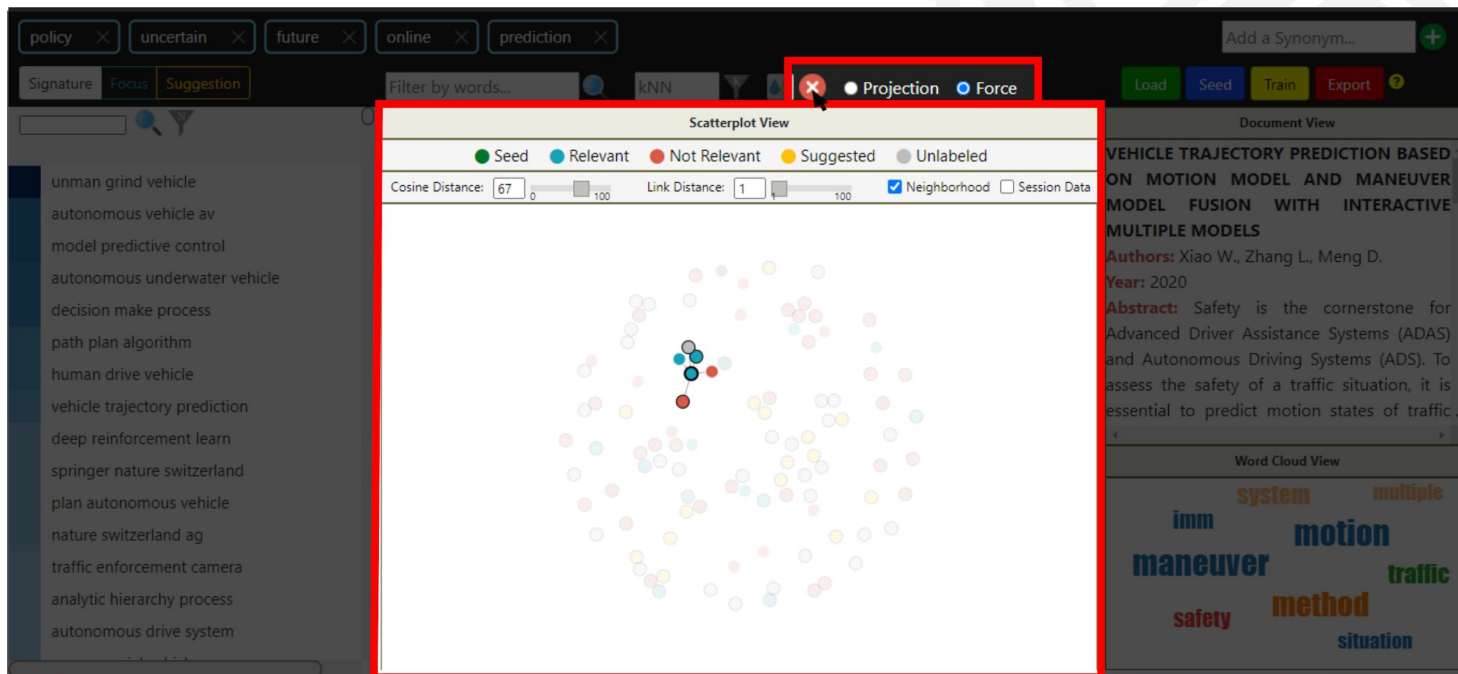
TRIVIR



Parameters

Neighborhood: Show 'closest neighbors' to a document, i.e., its most similar documents.

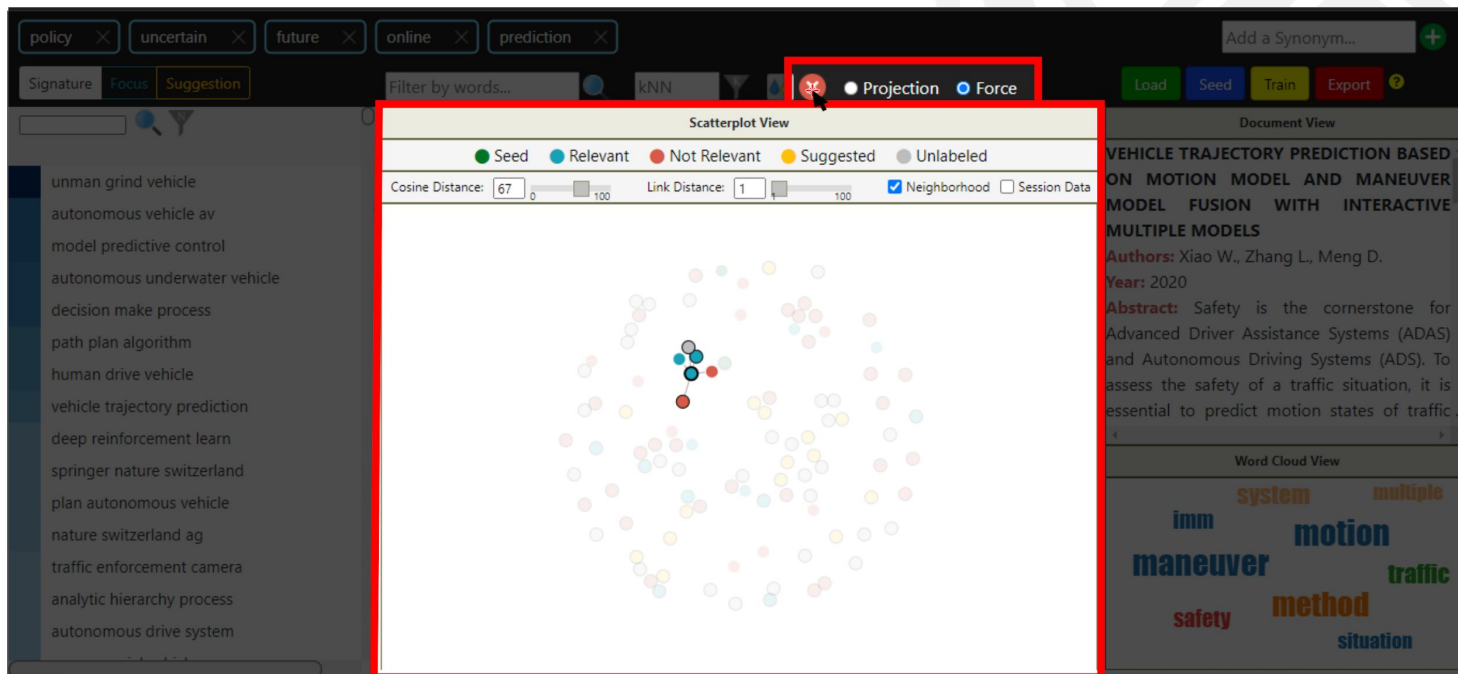
TRIVIR



Parameters

Neighborhood: Show 'closest neighbors' to a document, i.e., its most similar documents.

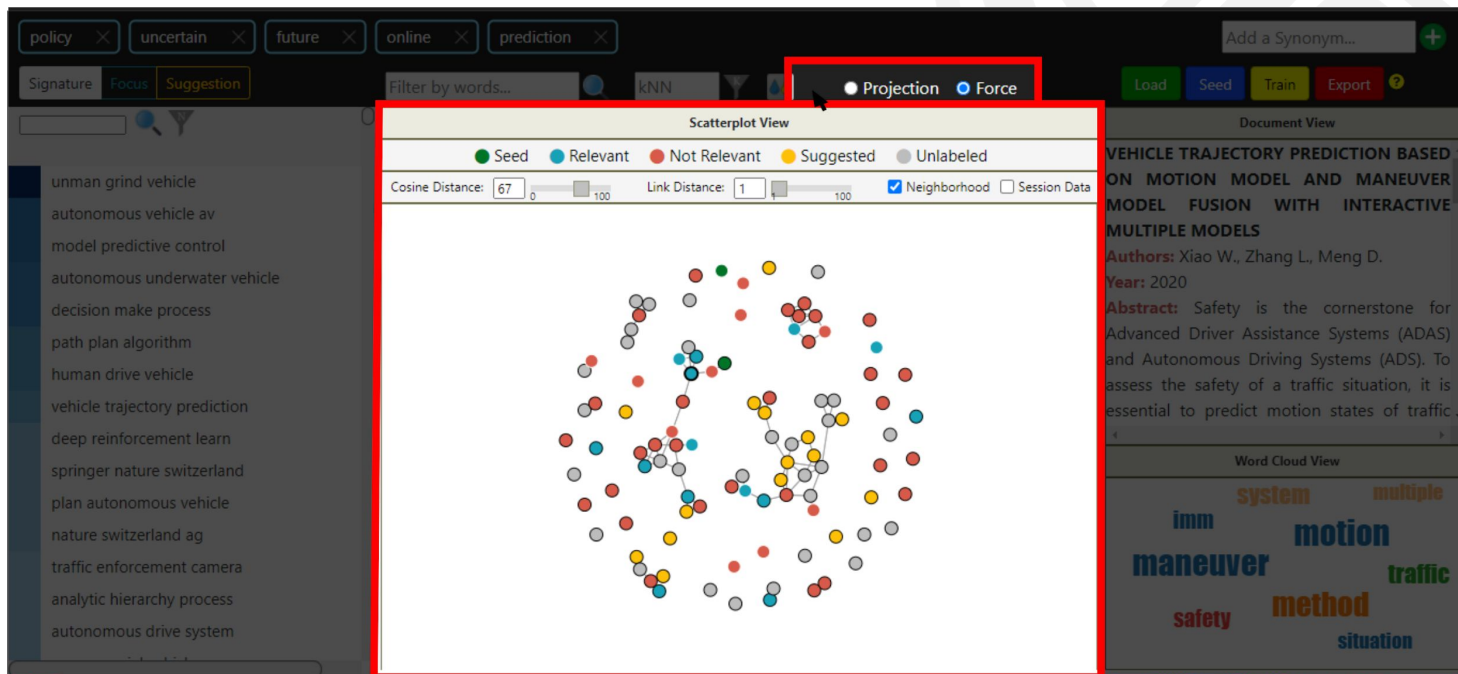
TRIVIR



Parameters

Neighborhood: Show 'closest neighbors' to a document, i.e., its most similar documents.

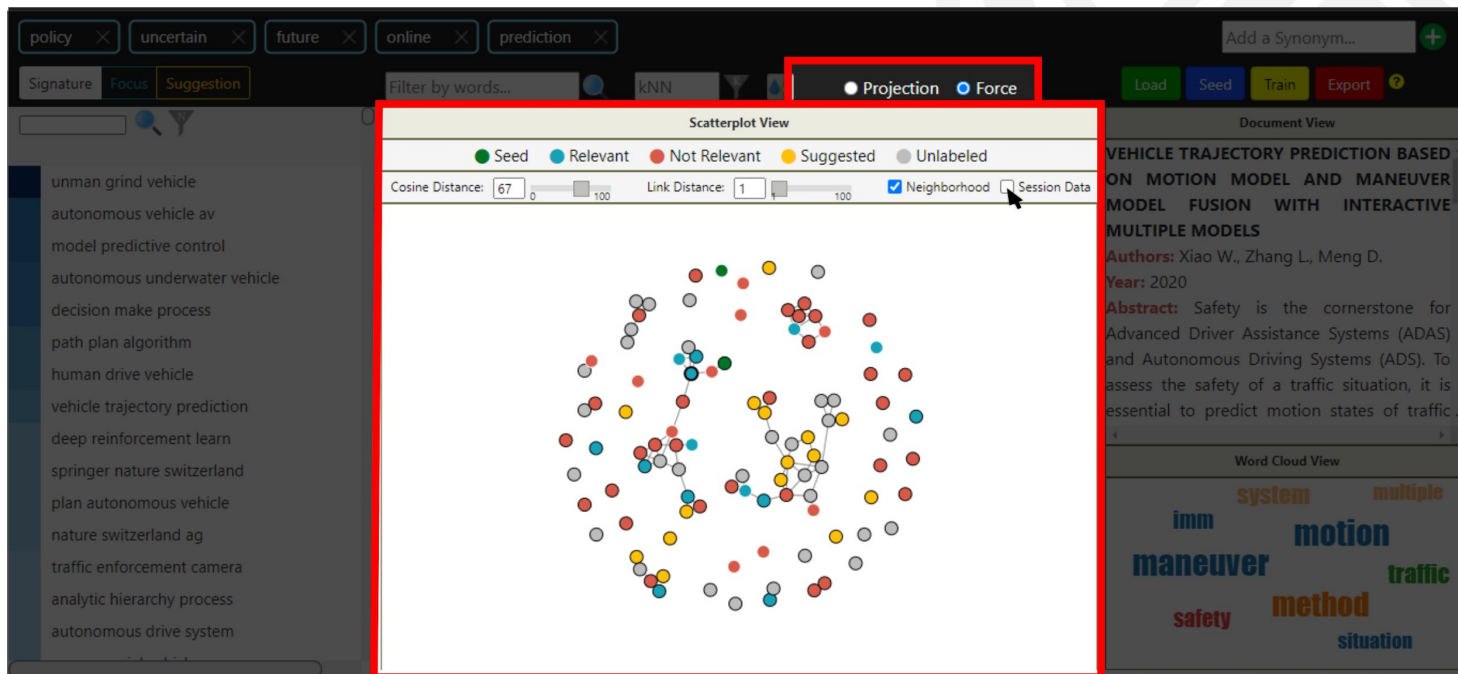
TRIVIR



Parameters

Neighborhood: Show 'closest neighbors' to a document, i.e., its most similar documents.

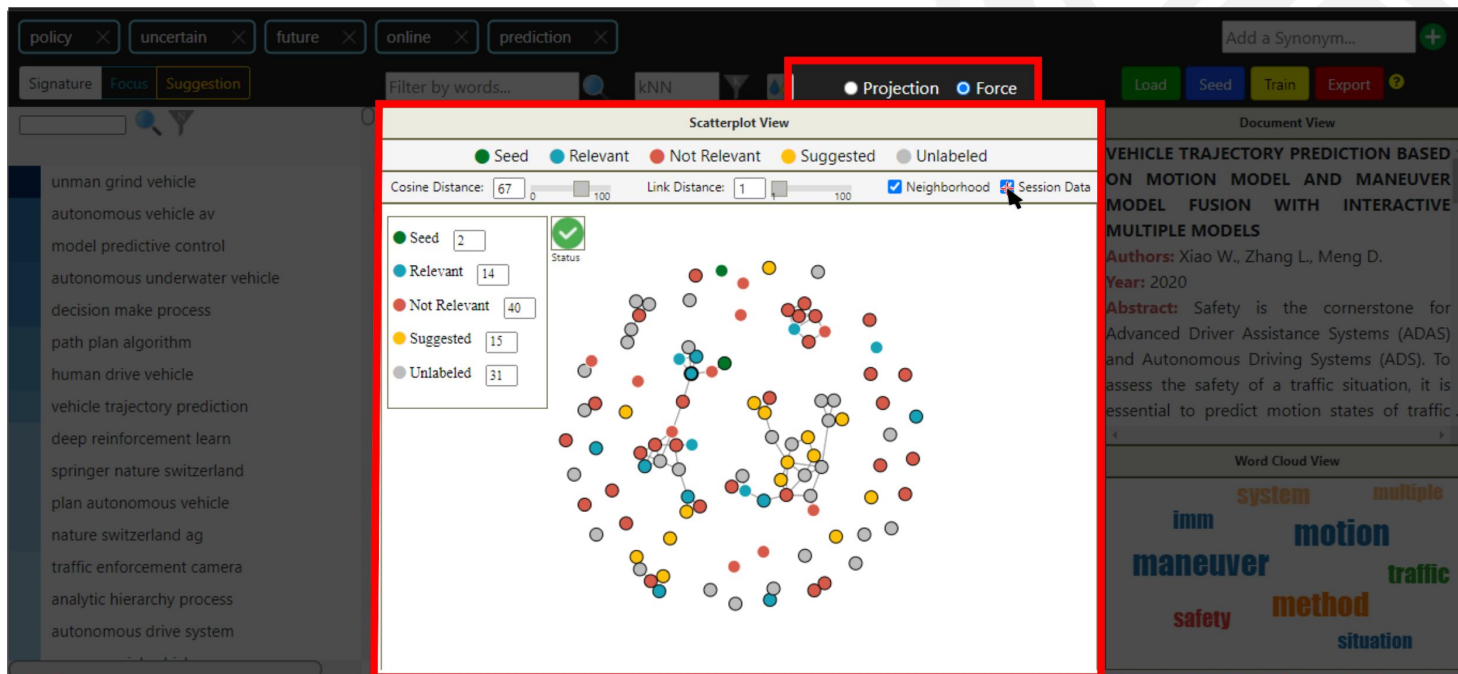
TRIVIR



Parameters

Session Data: Show how many documents per label, and the system status.

TRIVIR



Parameters

Session Data: Show how many documents per label, and the system status.

TRIVIR

The screenshot displays the TRIVIR interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are buttons for 'Signature', 'Focus', and 'Suggestion'. A search bar labeled 'Filter by words...' is present. The main area is divided into three sections: a left sidebar with a list of terms, a central 'Scatterplot View' with a legend and a network graph, and a right 'Document View' showing a selected document's details. The 'Document View' is highlighted with a red border and contains the following text:

Document View

VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS

Authors: Xiao W., Zhang L., Meng D.

Year: 2020

Abstract: Safety is the cornerstone for Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Systems (ADS). To assess the safety of a traffic situation, it is essential to predict motion states of traffic.

Below the document view is a 'Word Cloud View' with terms like 'system', 'multiple', 'motion', 'maneuver', 'method', 'situation', 'imm', 'safety', and 'traffic'.

Query document shown:
Clicking on a circle, the selected document's content is displayed in the Document view.

TRIVIR

The screenshot displays the TRIVIR interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are buttons for 'Signature', 'Focus', and 'Suggestion'. A search bar labeled 'Filter by words...' is present. The main area is divided into three sections: a left sidebar with a list of terms, a central 'Scatterplot View' with a legend and a network graph, and a right 'Document View' which is highlighted with a red box. The 'Document View' shows the title 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS', authors 'Xiao W., Zhang L., Meng D.', year '2020', and an abstract starting with 'Safety is the cornerstone for Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Systems (ADS). To assess the safety of a traffic situation, it is essential to predict motion states of traffic...'. Below the document view is a 'Word Cloud View' with terms like 'system', 'multiple', 'motion', 'maneuver', 'method', 'situation', 'imm', 'safety', and 'traffic'.

Query document shown:
Clicking on a circle, the selected document's content is displayed in the Document view.

TRIVIR

The screenshot displays the TRIVIR interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are buttons for 'Signature', 'Focus', and 'Suggestion'. A search bar labeled 'Filter by words...' is present. The main area is divided into three sections: a left sidebar with a list of terms, a central 'Scatterplot View' with a legend and a network graph, and a right 'Document View' which is highlighted with a red box. The 'Document View' shows the title 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS', authors 'Xiao W., Zhang L., Meng D.', year '2020', and an abstract starting with 'Safety is the cornerstone for Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Systems (ADS). To assess the safety of a traffic situation, it is essential to predict motion states of traffic...'. Below the document view is a 'Word Cloud View' with terms like 'system', 'multiple', 'motion', 'maneuver', 'method', 'situation', 'imm', 'safety', and 'traffic'.

Query document shown:
Clicking on a circle, the selected document's content is displayed in the Document view.

TRIVIR

The screenshot displays the TRIVIR interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are buttons for 'Signature', 'Focus', and 'Suggestion'. A search bar labeled 'Filter by words...' is present. The main area is divided into three sections: a left sidebar with a list of terms, a central 'Scatterplot View', and a right 'Document View'.

Scatterplot View: This section shows a network of nodes and edges. The nodes are color-coded: green for 'Seed', blue for 'Relevant', red for 'Not Relevant', yellow for 'Suggested', and grey for 'Unlabeled'. A legend on the left of the scatterplot shows the counts for each category: Seed (2), Relevant (14), Not Relevant (40), Suggested (15), and Unlabeled (31). A 'Status' icon with a green checkmark is also visible. The scatterplot includes sliders for 'Cosine Distance' (set to 67) and 'Link Distance' (set to 1), and checkboxes for 'Neighborhood' and 'Session Data'.

Document View: This view displays the content of a selected document. The text reads: "essential to predict motion states of traffic participants in the future with mathematic models. Accurate vehicle trajectory prediction is an important prerequisite for reasonable traffic situation risk assessment and appropriate decision making. Vehicle trajectory prediction methods can be generally divided into motion model based methods and maneuver model based methods. Vehicle trajectory prediction based on motion models can be accurate and".

Word Cloud View: Located below the document view, it shows a word cloud with terms such as 'system', 'multiple', 'imm', 'maneuver', 'motion', 'method', 'traffic', 'safety', and 'situation'.

Query document shown:
Clicking on a circle, the selected document's content is displayed in the Document view.

TRIVIR

The screenshot displays the TRIVIR interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are buttons for 'Signature', 'Focus', and 'Suggestion'. A search bar labeled 'Filter by words...' is present. The main area is divided into three sections: a left sidebar with a list of terms, a central 'Scatterplot View' with a legend and a network graph, and a right 'Document View' which is highlighted with a red box. The 'Document View' shows the title 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS', authors 'Xiao W., Zhang L., Meng D.', year '2020', and an abstract starting with 'Safety is the cornerstone for Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Systems (ADS)'. Below the document view is a 'Word Cloud View' with terms like 'system', 'multiple', 'motion', 'maneuver', 'method', 'situation', 'imm', 'safety', and 'traffic'.

Query document shown:
Clicking on a circle, the selected document's content is displayed in the Document view.

TRIVIR

The screenshot displays the TRIVIR software interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are buttons for 'Signature', 'Focus', and 'Suggestion'. A search bar labeled 'Filter by words...' is present, along with a 'kNN' dropdown and 'Projection' and 'Force' radio buttons. On the right, there are 'Load', 'Seed', 'Train', and 'Export' buttons, and a 'Add a Synonym...' button with a plus sign.

The main area is divided into three sections:

- Left Panel:** A list of search results including 'unman grind vehicle', 'autonomous vehicle av', 'model predictive control', 'autonomous underwater vehicle', 'decision make process', 'path plan algorithm', 'human drive vehicle', 'vehicle trajectory prediction', 'deep reinforcement learn', 'springer nature switzerland', 'plan autonomous vehicle', 'nature switzerland ag', 'traffic enforcement camera', 'analytic hierarchy process', and 'autonomous drive system'.
- Scatterplot View:** A central visualization showing a network of nodes and edges. Nodes are color-coded: green for 'Seed' (2), blue for 'Relevant' (14), red for 'Not Relevant' (40), yellow for 'Suggested' (15), and grey for 'Unlabeled' (31). The plot includes sliders for 'Cosine Distance' (set to 67) and 'Link Distance' (set to 1), and checkboxes for 'Neighborhood' and 'Session Data'. A 'Status' icon with a green checkmark is visible.
- Document View:** A text area on the right showing document metadata and content. The title is 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS'. The authors are 'Xiao W., Zhang L., Meng D.' and the year is '2020'. The abstract begins with 'Safety is the cornerstone for Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Systems (ADS). To assess the safety of a traffic situation, it is essential to predict motion states of traffic'.

A red-bordered box highlights the 'Word Cloud View' section, which displays the most frequent words from the selected document: 'system', 'multiple', 'motion', 'maneuver', 'method', 'situation', 'traffic', 'safety', and 'imm'.

Word Cloud View:
Show most frequent words in the selected document.

TRIVIR

The screenshot displays the TRIVIR software interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these, a search bar labeled 'Filter by words...' is highlighted with a red box. The main area is divided into three panels:

- Left Panel:** A list of document titles, including 'unman grind vehicle', 'autonomous vehicle av', 'model predictive control', 'autonomous underwater vehicle', 'decision make process', 'path plan algorithm', 'human drive vehicle', 'vehicle trajectory prediction', 'deep reinforcement learn', 'springer nature switzerland', 'plan autonomous vehicle', 'nature switzerland ag', 'traffic enforcement camera', 'analytic hierarchy process', and 'autonomous drive system'.
- Center Panel (Scatterplot View):** A network graph with nodes colored by status: Seed (green), Relevant (blue), Not Relevant (red), Suggested (yellow), and Unlabeled (grey). A legend on the left shows counts: Seed (2), Relevant (14), Not Relevant (40), Suggested (15), and Unlabeled (31). The graph shows clusters of nodes connected by lines. Parameters for 'Cosine Distance' (67) and 'Link Distance' (1) are visible.
- Right Panel (Document View):** Displays the content of a selected document: 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS'. It lists authors (Xiao W., Zhang L., Meng D.), the year (2020), and an abstract about safety and traffic prediction. Below this is a 'Word Cloud View' showing terms like 'system', 'multiple', 'motion', 'maneuver', 'traffic', 'method', 'situation', 'safety', and 'imm'.

Show only documents that include a **given term**

TRIVIR

The screenshot displays the TRIVIR interface with a search for the term "Model". The search results are visualized in a "Scatterplot View" where documents are represented as colored nodes connected by lines. The nodes are categorized by status: Seed (green), Relevant (blue), Not Relevant (red), Suggested (yellow), and Unlabeled (grey). The "Model" search term is highlighted in a red box in the search input field. The interface also shows a list of search results on the left, a document view on the right, and a word cloud at the bottom right.

Search Results:

- Seed: 2
- Relevant: 14
- Not Relevant: 40
- Suggested: 15
- Unlabeled: 31

Document View:

VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS
Authors: Xiao W., Zhang L., Meng D.
Year: 2020
Abstract: Safety is the cornerstone for Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Systems (ADS). To assess the safety of a traffic situation, it is essential to predict motion states of traffic

Word Cloud View:

system, multiple, motion, traffic, method, situation, maneuver, safety, imm

Show only documents that include a **given term**

TRIVIR

The screenshot displays the TRIVIR interface with a search filter for the term "Model" highlighted in a red box. The interface includes a sidebar with a list of terms, a central scatterplot view, and a document view on the right.

Scatterplot View Details:

- Legend: Seed (green), Relevant (blue), Not Relevant (red), Suggested (yellow), Unlabeled (grey)
- Filters: Cosine Distance: 67, Link Distance: 1, Neighborhood (unchecked), Session Data (checked)
- Counts: Seed: 2, Relevant: 14, Not Relevant: 40, Suggested: 15, Unlabeled: 31
- Status: Status

Document View Details:

VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS

Authors: Xiao W., Zhang L., Meng D.
Year: 2020

Abstract: Safety is the cornerstone for Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Systems (ADS). To assess the safety of a traffic situation, it is essential to predict motion states of traffic

Word Cloud View:

system, multiple, imm, maneuver, motion, traffic, safety, method, situation

Show only documents that include a **given term**

TRIVIR

The screenshot displays the TRIVIR interface with a search filter for the term "Model" highlighted in a red box. The interface includes a sidebar with a list of terms, a central scatterplot view, and a right-hand panel with document details and a word cloud.

Scatterplot View Legend:

- Seed: 2
- Relevant: 14
- Not Relevant: 40
- Suggested: 15
- Unlabeled: 31

Document View Details:

Document Title: VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS

Authors: Xiao W., Zhang L., Meng D.

Year: 2020

Abstract: Safety is the cornerstone for Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Systems (ADS). To assess the safety of a traffic situation, it is essential to predict motion states of traffic

Word Cloud View: system, multiple, motion, traffic, method, situation, maneuver, safety, imm

Show only documents that include a **given term**

TRIVIR

The screenshot displays the TRIVIR interface with a search for the term "Model". The search results are shown in a scatterplot view and a document view.

Search Results:

- Seed: 2
- Relevant: 14
- Not Relevant: 40
- Suggested: 15
- Unlabeled: 31

Scatterplot View:

- Legend: Seed (Green), Relevant (Blue), Not Relevant (Red), Suggested (Yellow), Unlabeled (Grey)
- Parameters: Cosine Distance: 67, Link Distance: 1, Neighborhood: , Session Data:

Document View:

VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS

Authors: Xiao W., Zhang L., Meng D.

Year: 2020

Abstract: Safety is the cornerstone for Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Systems (ADS). To assess the safety of a traffic situation, it is essential to predict motion states of traffic

Word Cloud View:

- Words: system, multiple, imm, maneuver, motion, traffic, safety, method, situation

Show only documents that include a **given term**

TRIVIR

The screenshot displays the TRIVIR interface with a search for the term "Model". The search results are shown in the Document View, which is highlighted with a red box. The search results include the title "VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS", authors "Xiao W., Zhang L., Meng D.", and year "2020". The abstract discusses the importance of safety in ADAS and ADS, and the need to predict motion states of traffic. A word cloud below the abstract highlights terms like "system", "multiple", "motion", "maneuver", "method", "situation", "imm", "safety", and "traffic".

policy x uncertain x future x online x prediction x

Signature Focus Suggestion

Model kNN Projection Force

Load Seed Train Export

Scatterplot View

Seed Relevant Not Relevant Suggested Unlabeled

Cosine Distance: 67 0 100 Link Distance: 1 0 100 Neighborhood Session Data

Seed 2 Relevant 14 Not Relevant 40 Suggested 15 Unlabeled 31

Document View

VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS

Authors: Xiao W., Zhang L., Meng D.

Year: 2020

Abstract: Safety is the cornerstone for Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Systems (ADS). To assess the safety of a traffic situation, it is essential to predict motion states of traffic.

Word Cloud View

system multiple motion maneuver method situation imm safety traffic

Highlight the **given term** in Document View

TRIVIR

The screenshot displays the TRIVIR interface with several components:

- Top Bar:** Contains tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. A search bar on the right has the text 'Add a Synonym...'. Below the tabs are buttons for 'Signature', 'Focus', and 'Suggestion'.
- Model Selection:** A dropdown menu is set to 'Model', and a red box highlights the 'kNN' filter option.
- Scatterplot View:** The main area shows a scatterplot of documents. A legend on the left indicates document status: Seed (2), Relevant (14), Not Relevant (40), Suggested (15), and Unlabeled (31). The plot shows a cluster of documents, with a green checkmark indicating the filter is active.
- Document View:** On the right, a document titled 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS' is displayed. It lists authors (Xiao W., Zhang L., Meng D.) and the year (2020). The abstract discusses safety and motion prediction for ADAS and ADS.
- Word Cloud View:** Below the document view, a word cloud shows terms like 'safety', 'method', 'traffic', 'imm', 'motion', 'situation', 'maneuver', and 'system'.

Filter the **K** documents most similar
to the **initial query** document

TRIVIR

The screenshot displays the TRIVIR interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are buttons for 'Signature', 'Focus', and 'Suggestion'. A search bar contains the text 'Model'. A red box highlights a filter input field containing the number '1'. Below the search bar, there are buttons for 'Load', 'Seed', 'Train', and 'Export'. The main area is divided into three sections: 'Scatterplot View', 'Document View', and 'Word Cloud View'. The 'Scatterplot View' section shows a legend with categories: Seed (2), Relevant (14), Not Relevant (40), Suggested (15), and Unlabeled (31). A status icon with a green checkmark is visible. The 'Document View' section displays the title 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS' and authors 'Xiao W., Zhang L., Meng D.'. The 'Word Cloud View' section shows words like 'safety', 'method', 'traffic', 'imm', 'motion', 'situation', 'maneuver', and 'system'.

Filter the **K = 1** documents most similar to the **initial query** document

TRIVIR

The screenshot displays the TRIVIR interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are buttons for 'Signature', 'Focus', and 'Suggestion'. A search bar contains the text 'Model'. A filter dropdown menu is set to '5'. The main area is titled 'Scatterplot View' and shows a plot with points colored by status: Seed (green), Relevant (blue), Not Relevant (red), Suggested (yellow), and Unlabeled (grey). The plot includes sliders for 'Cosine Distance' (set to 67) and 'Link Distance' (set to 1), and checkboxes for 'Neighborhood' and 'Session Data'. A legend on the left shows the counts for each status: Seed (2), Relevant (14), Not Relevant (40), Suggested (15), and Unlabeled (31). A green checkmark icon is visible next to the legend. The right panel shows document details for 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS' by Xiao W., Zhang L., and Meng D. (2020). Below this is a word cloud with terms like 'safety', 'method', 'traffic', 'imm', 'motion', 'situation', 'maneuver', and 'system'.

Filter the **K = 5** documents most similar to the **initial query** document

TRIVIR

The screenshot displays the TRIVIR interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these, there are buttons for 'Signature', 'Focus', and 'Suggestion'. A search bar contains the text '13'. The main area is divided into three panels:

- Left Panel:** A list of terms including 'unman grind vehicle', 'autonomous vehicle av', 'model predictive control', 'autonomous underwater vehicle', 'decision make process', 'path plan algorithm', 'human drive vehicle', 'vehicle trajectory prediction', 'deep reinforcement learn', 'springer nature switzerland', 'plan autonomous vehicle', 'nature switzerland ag', 'traffic enforcement camera', 'analytic hierarchy process', and 'autonomous drive system'.
- Center Panel (Scatterplot View):** A scatterplot showing data points categorized by status: Seed (green), Relevant (blue), Not Relevant (red), Suggested (yellow), and Unlabeled (grey). The plot includes sliders for 'Cosine Distance' (set to 67) and 'Link Distance' (set to 1), and checkboxes for 'Neighborhood' and 'Session Data'. A legend on the left shows counts: Seed (2), Relevant (14), Not Relevant (40), Suggested (15), and Unlabeled (31). A green checkmark icon is visible next to the legend.
- Right Panel:** A document view for 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS'. It lists authors (Xiao W., Zhang L., Meng D.), year (2020), and an abstract: 'Safety is the cornerstone for Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Systems (ADS). To assess the safety of a traffic situation, it is essential to predict motion states of traffic'.

Filter the **K = 13** documents most similar to the **initial query** document

TRIVIR

policy x uncertain x future x online x prediction x

Signature Focus Suggestion

Filter by words... kNN

Projection Force

Load Seed Train Export

Scatterplot View

Seed Relevant Not Relevant Suggested Unlabeled

Cosine Distance: 67 Link Distance: 1 Neighborhood Session Data

Seed 2 Relevant 14 Not Relevant 40 Suggested 15 Unlabeled 31

Document View

VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS

Authors: Xiao W., Zhang L., Meng D.

Year: 2020

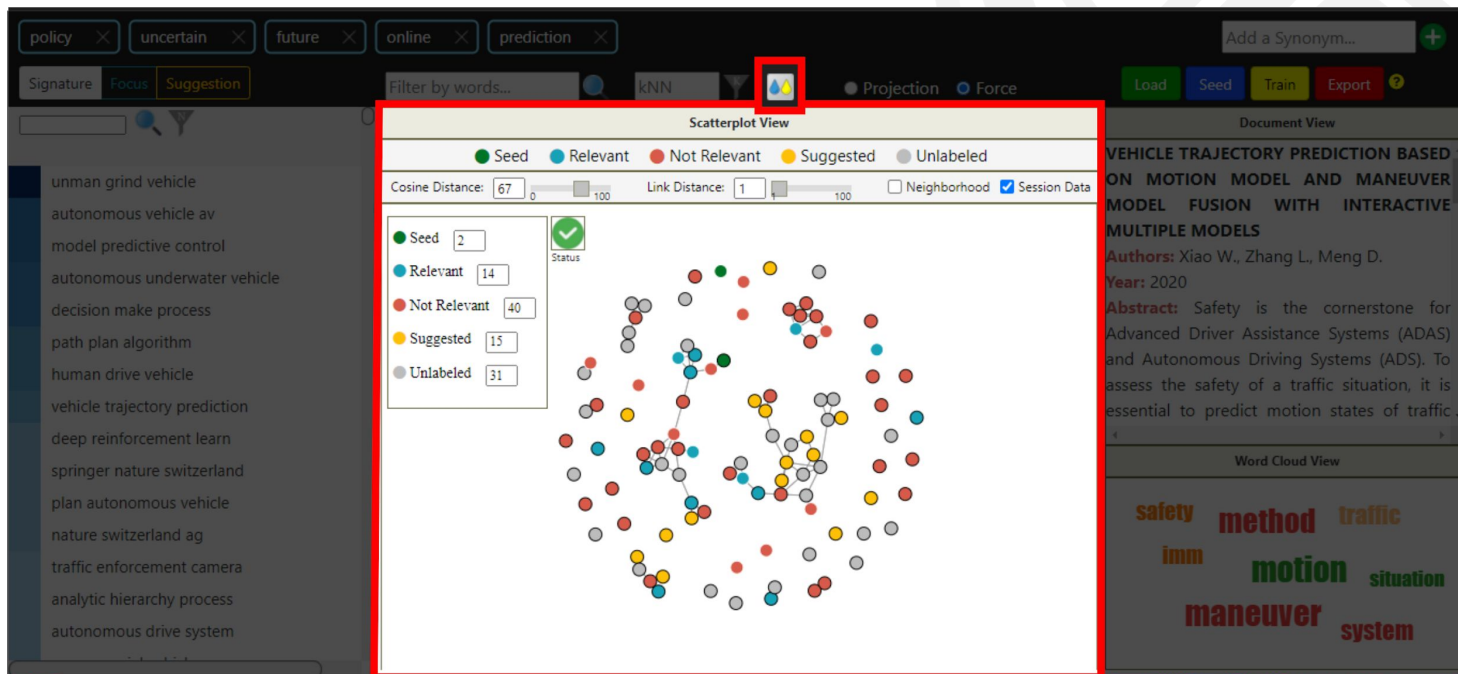
Abstract: Safety is the cornerstone for Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Systems (ADS). To assess the safety of a traffic situation, it is essential to predict motion states of traffic

Word Cloud View

safety method traffic
imm motion situation
maneuver system

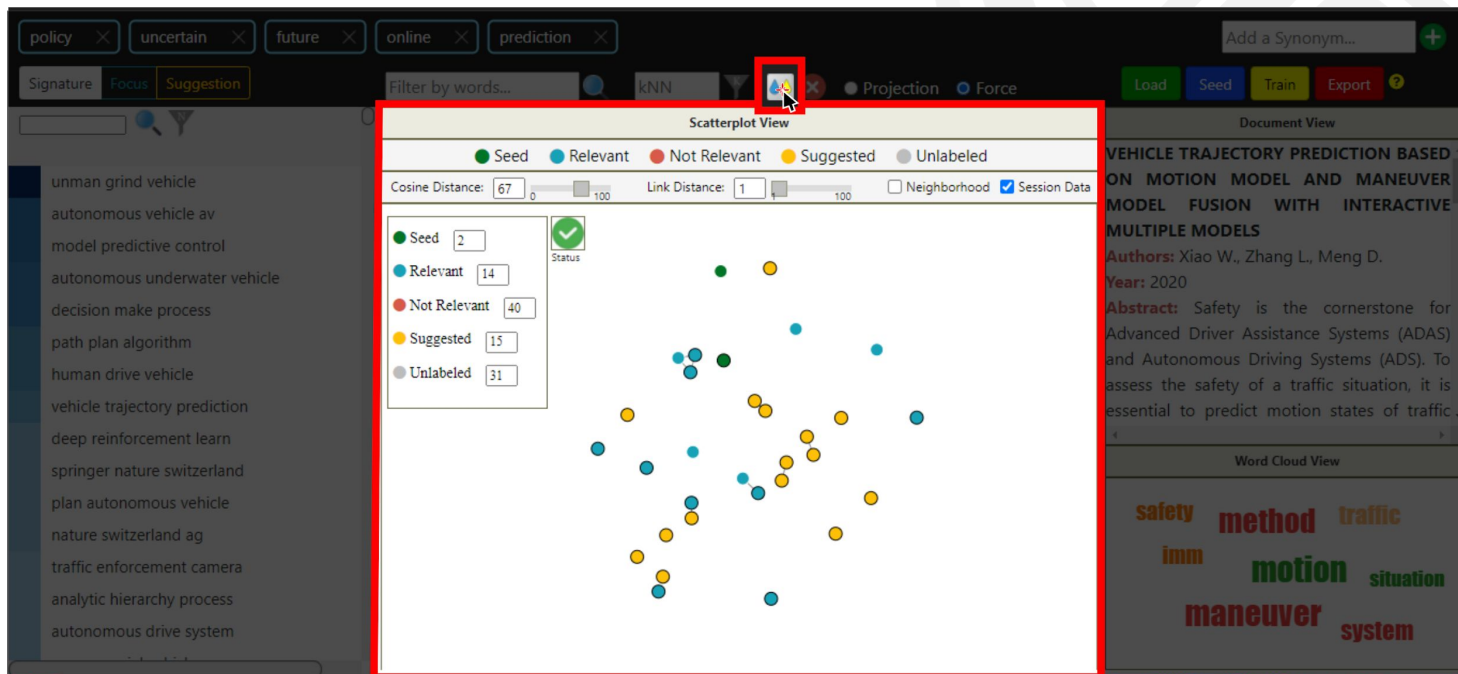
Reduce point clutter by displaying only the **seed**, **relevant** and **suggested** documents

TRIVIR



Reduce point clutter by displaying only the **seed**, **relevant** and **suggested** documents

TRIVIR



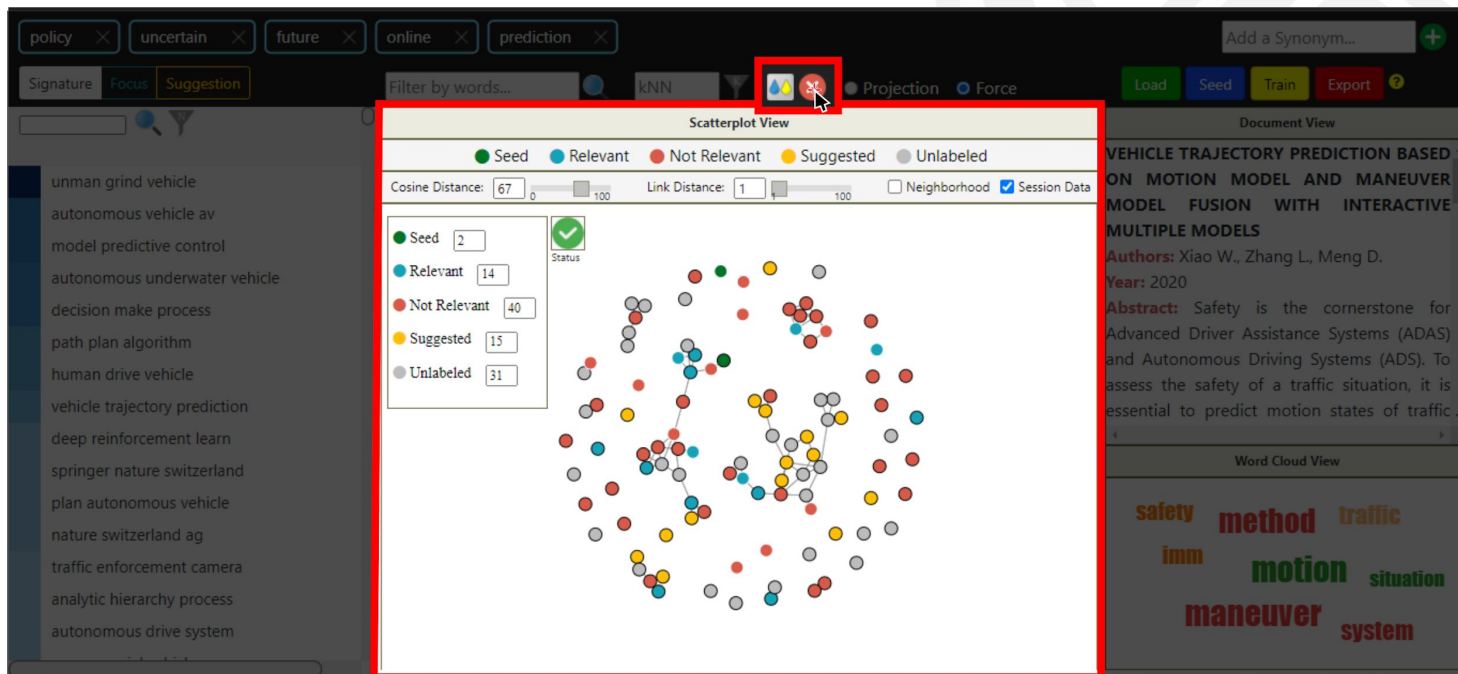
Reduce point clutter by displaying only the **seed**, **relevant** and **suggested** documents

TRIVIR



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Reduce point clutter by displaying only the **seed**, **relevant** and **suggested** documents

TRIVIR

The screenshot displays the TRIVIR interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are buttons for 'Signature', 'Focus', and 'Suggestion'. The main area is divided into three sections:

- Left Panel:** A list of terms including 'unman grind vehicle', 'autonomous vehicle av', 'model predictive control', 'autonomous underwater vehicle', 'decision make process', 'path plan algorithm', 'human drive vehicle', 'vehicle trajectory prediction', 'deep reinforcement learn', 'springer nature switzerland', 'plan autonomous vehicle', 'nature switzerland ag', 'traffic enforcement camera', 'analytic hierarchy process', and 'autonomous drive system'.
- Center Panel (Scatterplot View):** A network graph with nodes colored by status: Seed (green), Relevant (blue), Not Relevant (red), Suggested (yellow), and Unlabeled (grey). A legend on the left shows counts: Seed (2), Relevant (14), Not Relevant (40), Suggested (15), and Unlabeled (31). A 'Status' icon with a green checkmark is visible. Parameters include 'Cosine Distance: 67' and 'Link Distance: 1'. There are checkboxes for 'Neighborhood' and 'Session Data'.
- Right Panel (Document View):** Displays a document titled 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS'. It lists authors as 'Xiao W., Zhang L., Meng D.' and the year as '2020'. The abstract states: 'Safety is the cornerstone for Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Systems (ADS). To assess the safety of a traffic situation, it is essential to predict motion states of traffic...'. Below this is a 'Word Cloud View' showing terms like 'safety', 'method', 'traffic', 'imm', 'motion', 'situation', 'maneuver', and 'system'.

The Terms view:

Show the five most frequent terms in the **initial query** document. It is possible to **remove** or to **add** terms, and also find synonyms.

TRIVIR

The screenshot displays the TRIVIR interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are buttons for 'Signature', 'Focus', and 'Suggestion'. The main area is divided into three sections: a left sidebar with a list of terms, a central 'Scatterplot View' showing a network graph with nodes colored by status (Seed, Relevant, Not Relevant, Suggested, Unlabeled), and a right 'Document View' showing a document snippet. The document snippet includes the title 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS', authors 'Xiao W., Zhang L., Meng D.', year '2020', and an abstract. Below the document view is a 'Word Cloud View' showing terms like 'safety', 'method', 'traffic', 'imm', 'motion', 'situation', 'maneuver', and 'system'.

unman grind vehicle
autonomous vehicle av
model predictive control
autonomous underwater vehicle
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path plan algorithm
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springer nature switzerland
plan autonomous vehicle
nature switzerland ag
traffic enforcement camera
analytic hierarchy process
autonomous drive system

Scatterplot View

● Seed ● Relevant ● Not Relevant ● Suggested ● Unlabeled

Cosine Distance: 67 Link Distance: 1 Neighborhood Session Data

Seed 2
Relevant 14
Not Relevant 40
Suggested 15
Unlabeled 31

Document View

VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS

Authors: Xiao W., Zhang L., Meng D.
Year: 2020

Abstract: Safety is the cornerstone for Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Systems (ADS). To assess the safety of a traffic situation, it is essential to predict motion states of traffic

Word Cloud View

safety method traffic
imm motion situation
maneuver system

The Terms view:

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TRIVIR

The screenshot displays the TRIVIR interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are buttons for 'Signature', 'Focus', and 'Suggestion'. The main area is divided into three sections: a left sidebar with a list of terms, a central 'Scatterplot View' showing a network graph with nodes colored by status (Seed, Relevant, Not Relevant, Suggested, Unlabeled), and a right 'Document View' showing a document snippet. The document snippet includes the title 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS', authors 'Xiao W., Zhang L., Meng D.', year '2020', and an abstract. Below the document view is a 'Word Cloud View' showing terms like 'safety', 'method', 'traffic', 'imm', 'motion', 'situation', 'maneuver', and 'system'.

The Terms view:

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TRIVIR

The screenshot displays the TRIVIR interface. At the top, there is a search bar with the text "policy uncertain future online prediction" and a "Add a Synonym..." button. Below the search bar, there are several tabs: "unsignalized", "variable", "surround", "action", "approach", "code", "course", "custom", "guideline", and "discretion". The main area is divided into three sections: "Scatterplot View", "Document View", and "Word Cloud View".

The "Scatterplot View" section shows a network graph with nodes and edges. The nodes are colored based on their status: Seed (green), Relevant (blue), Not Relevant (red), Suggested (yellow), and Unlabeled (grey). The graph is filtered by words, and the "Filter by words..." field contains "kNN". The "Scatterplot View" also includes a "Status" section with a green checkmark and a "Session Data" checkbox.

The "Document View" section shows the title "VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS" and the authors "Xiao W., Zhang L., Meng D." and the year "2020". The abstract text is: "Safety is the cornerstone for Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Systems (ADS). To assess the safety of a traffic situation, it is essential to predict motion states of traffic".

The "Word Cloud View" section shows a word cloud with the following terms: "safety", "method", "traffic", "imm", "motion", "situation", "maneuver", and "system".

The Terms view:

Show the five most frequent terms in the **initial query** document. It is possible to **remove** or to **add** terms, and also find synonyms.

TRIVIR

The screenshot displays the TRIVIR interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. A search bar contains 'Add a Synonym...'. Below the search bar, there are buttons for 'Load', 'Seed', 'Train', and 'Export'. The main area is divided into three sections: 'Scatterplot View', 'Document View', and 'Word Cloud View'. The 'Scatterplot View' shows a network of nodes and edges, with a legend indicating node types: Seed (2), Relevant (14), Not Relevant (40), Suggested (15), and Unlabeled (31). The 'Document View' shows the title 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS' and authors 'Xiao W., Zhang L., Meng D.' with the year '2020'. The 'Word Cloud View' shows terms like 'safety', 'method', 'traffic', 'imm', 'motion', 'situation', 'maneuver', and 'system'.

The Terms view:

Show the five most frequent terms in the **initial query** document. It is possible to **remove** or to **add** terms, and also find synonyms.

TRIVIR

The screenshot displays the TRIVIR interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. A search bar contains the text 'Add a Synonym...' with a plus icon. Below the search bar, there are buttons for 'Load', 'Seed', 'Train', and 'Export'. The main area is divided into three sections: 'Scatterplot View', 'Document View', and 'Word Cloud View'. The 'Scatterplot View' shows a network of nodes colored by status: Seed (2), Relevant (14), Not Relevant (40), Suggested (15), and Unlabeled (31). The 'Document View' shows the title 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS' and an abstract. The 'Word Cloud View' shows terms like 'safety', 'method', 'traffic', 'imm', 'motion', 'situation', 'maneuver', and 'system'.

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Show the five most frequent terms in the **initial query** document.
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TRIVIR

The screenshot displays the TRIVIR interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. A search bar contains 'Add a Synonym...'. Below the tabs, there are buttons for 'Signature', 'Focus', and 'Suggestion'. The main area is divided into three sections: a left sidebar with a list of terms, a central 'Scatterplot View' showing a network graph with nodes colored by status (Seed, Relevant, Not Relevant, Suggested, Unlabeled), and a right sidebar with a 'Document View' and a 'Word Cloud View'. The 'Document View' shows a document titled 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS' by Xiao W., Zhang L., and Meng D. The 'Word Cloud View' shows the five most frequent terms: 'safety', 'method', 'traffic', 'maneuver', and 'motion'.

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traffic enforcement camera
analytic hierarchy process
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Filter by words... kNN Projection Force Load Seed Train Export

Scatterplot View

Seed Relevant Not Relevant Suggested Unlabeled

Cosine Distance: 67 Link Distance: 1 Neighborhood Session Data

Seed 2
Relevant 14
Not Relevant 40
Suggested 15
Unlabeled 31

Document View

VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS

Authors: Xiao W., Zhang L., Meng D.
Year: 2020

Abstract: Safety is the cornerstone for Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Systems (ADS). To assess the safety of a traffic situation, it is essential to predict motion states of traffic

Word Cloud View

safety method traffic
imm motion situation
maneuver system

The Terms view:

Show the five most frequent terms in the **initial query** document.
It is possible to **remove** or to **add** terms, and also find synonyms.

TRIVIR

The screenshot shows the TRIVIR interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below the tabs is a 'Signature' section with a search bar and a list of terms. A red box highlights the search bar (labeled 'A') and the list of terms (labeled 'B'). The main area displays a 'Scatterplot View' with a network graph of nodes and edges, and a 'Document View' showing a paper abstract titled 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS'. The abstract lists authors (Xiao W., Zhang L., Meng D.) and the year (2020). A 'Word Cloud View' is also visible at the bottom right, showing terms like 'safety', 'method', 'traffic', 'imm', 'motion', 'situation', 'maneuver', and 'system'.

Signature List view:

Show a rank of relevant 3-grams in the corpus. The user can filter 3-grams with a particular term **A** or with terms from the Terms view **B**.

TRIVIR

policy × uncertain × future × online × prediction × Add a Synonym... +

Signature **Focus** Suggestion

Filter by words... kNN Projection Force Load Seed Train Export ?

Scatterplot View

Seed Relevant Not Relevant Suggested Unlabeled

Cosine Distance: 67 Link Distance: 1 Neighborhood Session Data

Seed 2 Relevant 14 Not Relevant 40 Suggested 15 Unlabeled 31

total: 16

AUTOMATED DRIVING IN UNCERTAIN ENVIRONM
TOWARDS AUTONOMOUS NAVIGATION OF UNSI
Context and Intention Aware Planning for Urban D
Bidirectional Long Shot-Term Memory-Based Inte
Path and control planning for autonomous vehicle
Vehicle Trajectory Prediction Based on Motion Mo
iADA*: Improved Anytime Path Planning and Repl
TOWARDS TACTICAL LANE CHANGE BEHAVIOR P
Automated vehicles and the city of tomorrow: A b
Enable faster and smoother spatio-temporal traje
Distributed Multiagent Coordinated Learning for
Conditional Generative Neural System for Probab
Decision-making in driver-automation shared con
A New Approach Using Hedge Algebra Combined
Road Selection for Autonomous Trucks in Turkey v
What contributes to driving behavior prediction a

Document View

VEHICLE TRAJECTORY PREDICTION BASED
ON MOTION MODEL AND MANEUVER
MODEL FUSION WITH INTERACTIVE
MULTIPLE MODELS
Authors: Xiao W., Zhang L., Meng D.
Year: 2020
Abstract: Safety is the cornerstone for
Advanced Driver Assistance Systems (ADAS)
and Autonomous Driving Systems (ADS). To
assess the safety of a traffic situation, it is
essential to predict motion states of traffic

Word Cloud View

safety method traffic
imm motion situation
maneuver system

Focus List view:

List all documents currently labeled as **seed** or **relevant**.

The screenshot displays the TRIVIR interface. At the top, there are search filters: 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these is a 'Suggestion' tab, which is highlighted with a red box. The main area is divided into three sections: a 'Scatterplot View' on the left, a 'Document View' in the middle, and a 'Word Cloud View' on the right. The 'Scatterplot View' shows a network of nodes and edges, with a legend indicating node status: Seed (2), Relevant (14), Not Relevant (40), Suggested (15), and Unlabeled (31). The 'Document View' shows a paper titled 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS' by Xiao W., Zhang L., and Meng D. The 'Word Cloud View' shows terms like 'safety', 'method', 'traffic', 'imm', 'motion', 'situation', 'maneuver', and 'system'.

Suggestion List view:

List the documents currently suggested as relevant by the Machine Learning classifier.

TRIVIR

The screenshot displays the TRIVIR software interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are buttons for 'Signature', 'Focus', and 'Suggestion'. A search bar labeled 'Filter by words...' is present. The main area is divided into three sections: 'Scatterplot View', 'Document View', and 'Word Cloud View'. The 'Scatterplot View' shows a network of nodes and edges, with a legend indicating node status: Seed (green), Relevant (blue), Not Relevant (red), Suggested (yellow), and Unlabeled (grey). The 'Document View' shows a document titled 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS' by Xiao W., Zhang L., and Meng D. The 'Word Cloud View' displays terms like 'safety', 'method', 'traffic', 'imm', 'motion', 'situation', 'maneuver', and 'system'. A red box highlights the 'Train' button in the top right corner.

Train Button

Retrain the ML algorithm considering previous user feedback.
This step can improve the recommendation of documents.

TRIVIR

The screenshot displays the TRIVIR software interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are buttons for 'Signature', 'Focus', and 'Suggestion'. A search bar labeled 'Filter by words...' is present. The main area is divided into three sections: a list of documents on the left, a 'Scatterplot View' in the center, and a 'Document View' on the right. The 'Scatterplot View' shows a network of nodes colored by status: Seed (green), Relevant (blue), Not Relevant (red), Suggested (yellow), and Unlabeled (grey). A legend on the left of the scatterplot shows counts for each status: Seed (2), Relevant (14), Not Relevant (40), Suggested (15), and Unlabeled (31). The 'Document View' on the right shows a document titled 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS' by Xiao W., Zhang L., and Meng D. The 'Export' button in the top right corner is highlighted with a red box.

Export Button

Download from the server a file containing all session data for further exploration.

The screenshot displays the TRIVIR software interface. At the top, there are tabs for 'policy', 'uncertain', 'future', 'online', and 'prediction'. Below these are buttons for 'Signature', 'Focus', and 'Suggestion'. A search bar labeled 'Filter by words...' is present. The main area is divided into three sections:

- Scatterplot View:** Features a legend with categories: Seed (green), Relevant (blue), Not Relevant (red), Suggested (yellow), and Unlabeled (grey). Below the legend are input fields for 'Cosine Distance' (set to 67) and 'Link Distance' (set to 1). A 'Status' icon with a green checkmark is visible. The scatterplot itself shows a network of nodes connected by lines, with nodes colored according to the legend.
- Document View:** Displays a document titled 'VEHICLE TRAJECTORY PREDICTION BASED ON MOTION MODEL AND MANEUVER MODEL FUSION WITH INTERACTIVE MULTIPLE MODELS'. The authors listed are 'Xiao W., Zhang L., Meng D.' and the year is '2020'. The abstract begins with 'Safety is the cornerstone for Advanced Driver Assistance Systems (ADAS) and Autonomous Driving Systems (ADS). To assess the safety of a traffic situation, it is essential to predict motion states of traffic'.
- Word Cloud View:** Shows a word cloud with terms such as 'safety', 'method', 'traffic', 'imm', 'motion', 'situation', 'maneuver', and 'system'.

At the top right of the interface, there is a button with a question mark icon, which is highlighted in red in the image.

Tips Button (Help)

The tips button shows a Guided Tour through the system functionalities.

User Study

Hands On!

User Study

Thinking aloud:

- Describe your thoughts as you go along

Make notes:

- Strengths
- Weaknesses
- General Considerations