

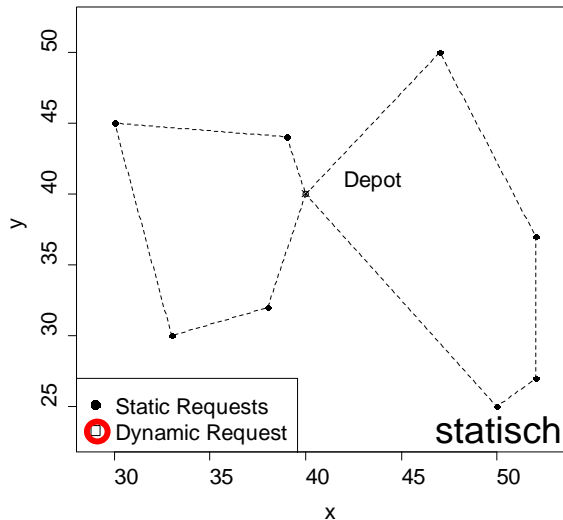
Automatisierung der **Auswahl geeigneter Optimierungsalgorithmen** für die **dynamische Fahrzeugwegeplanung** in Logistiknetzen

Thomas Mayer, UniBw

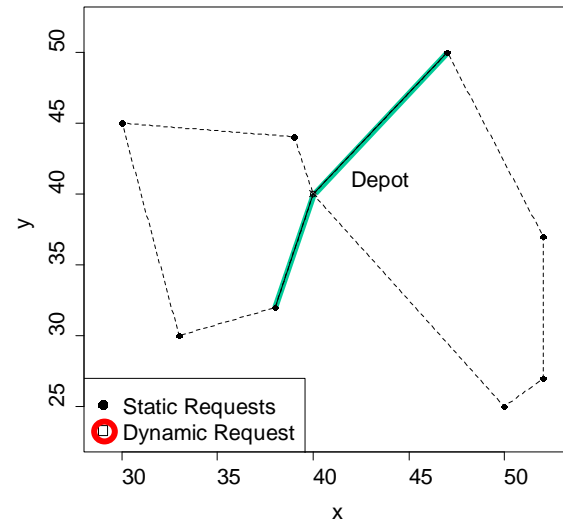
1. *Fahrzeugwegeplanung: Problembeschreibung & Anwendung*
2. *Auswahl geeigneter Optimierungsalgorithmen: Algorithm Selection Problem (ASP)*
 1. *Problem Instanz*
 2. *Problem Features*
 3. *Algorithmen und Performance*
3. *Ausblick*

Problembeschreibung & Anwendung

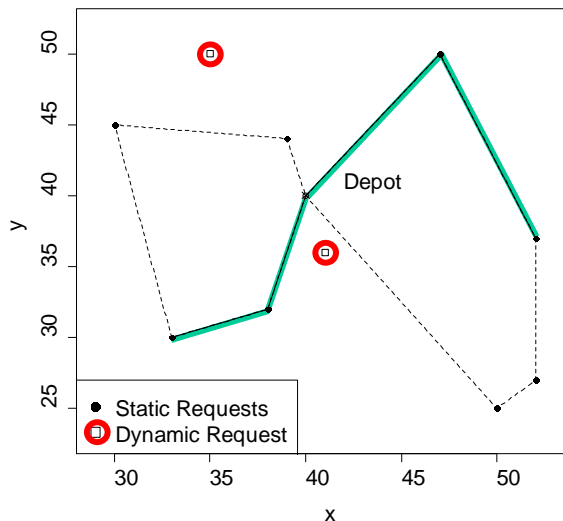
DVRP $t_i, t_i=0$



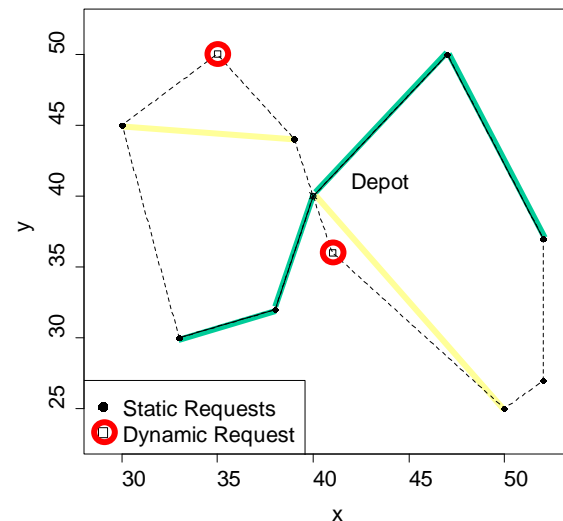
DVRP $t_i, t_i>0 \text{ \& } t_i<t_{dr}$



DVRP $t_i, t_i=t_{dr}$



DVRP $t_i, t_i=t_{dr}$



Problembeschreibung & Anwendung

- Anfrage definiert Lieferung oder Abholung:
 - Liefer- und Abholservices (z.B.: Zeitungs- und Öllieferung)



* Pictures designed by Freepik, <https://de.freepik.com>

Problembeschreibung & Anwendung

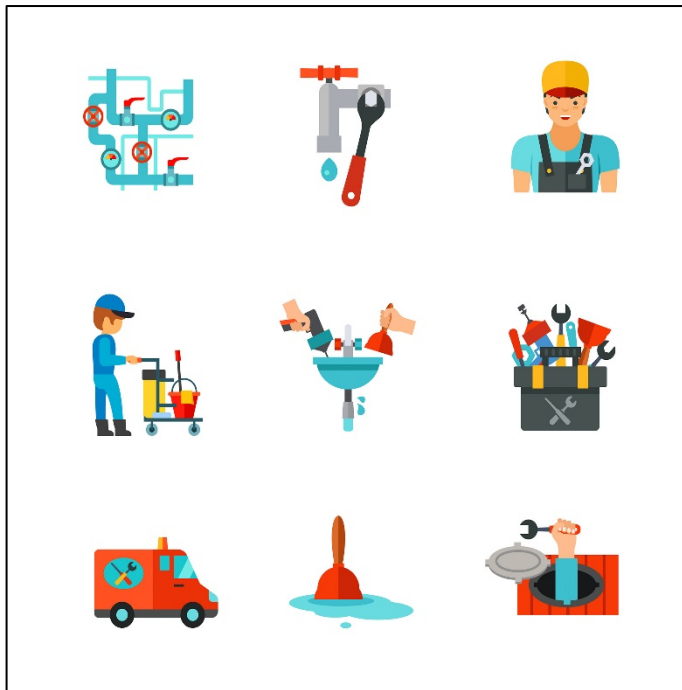
- Anfrage definiert Lieferung und Abholung:
 - Personen- und Krankentransporte



* Pictures designed by Freepik, <https://de.freepik.com>

Problembeschreibung & Anwendung

- Anfrage definiert konkreten Service:
 - Wartungs-, Reparatur- und Aufklärungsservice



* Pictures designed by Freepik, <https://de.freepik.com>

Problembeschreibung & Anwendung

- Entscheidung für Algorithmus der dynamische Anfragen plant
 - Problem modellieren und simulieren,
 - Greedy: Neue Anfragen werden an best-möglicher Stelle in die Tour eingeplant.



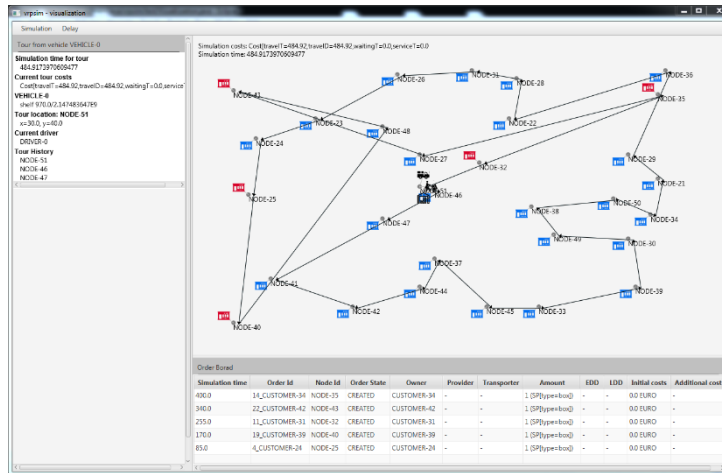
Problembeschreibung & Anwendung

- Entscheidung für Algorithmus der dynamische Anfragen plant
 - Problem modellieren und simulieren,
 - Replanning: Neue Anfrage löst Neu-Planung der Tour aus

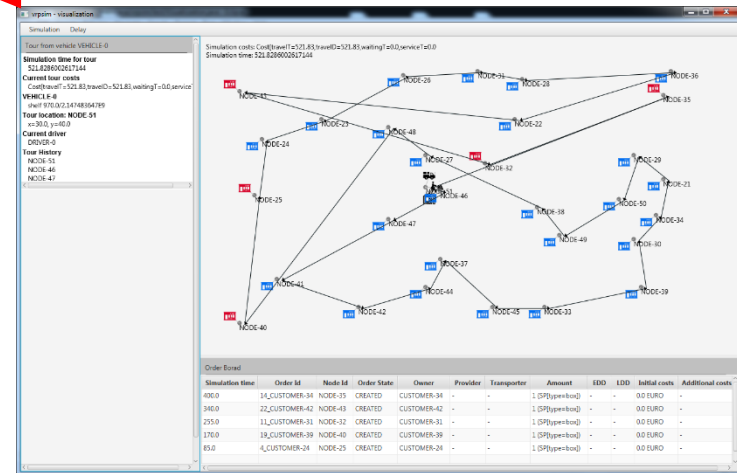


Problembeschreibung & Anwendung

Greedy, Kosten: **484,92**



Replanning, Kosten: **521,83**

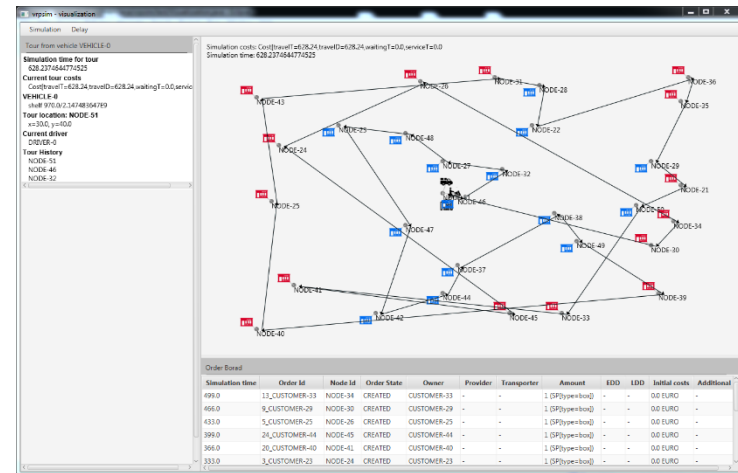
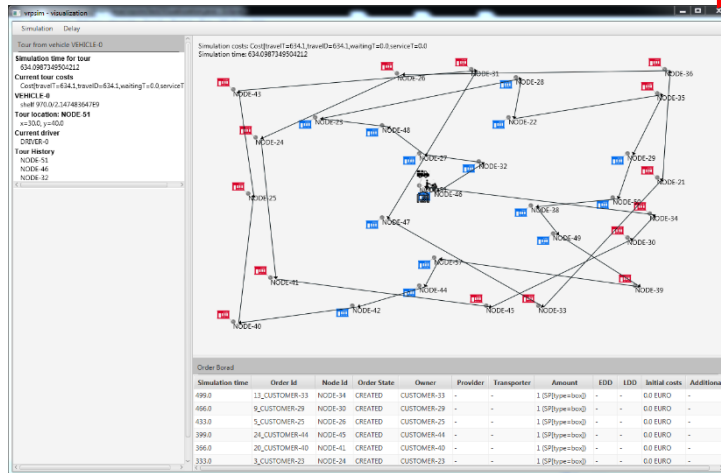


Problembeschreibung & Anwendung

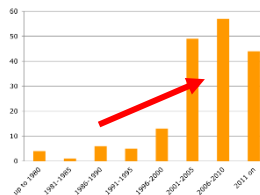
Greedy, Kosten: **634,09**



Replanning, Kosten: **628,23**



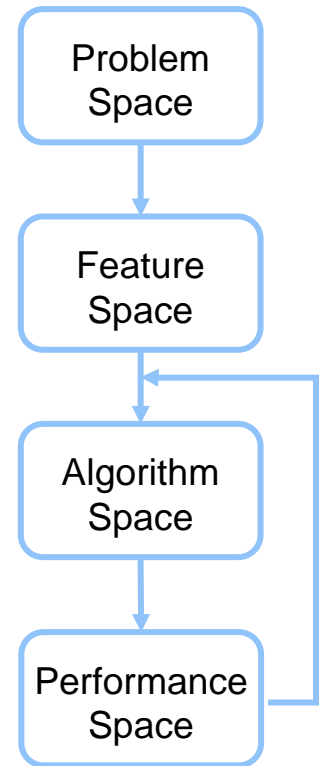
DVRP*



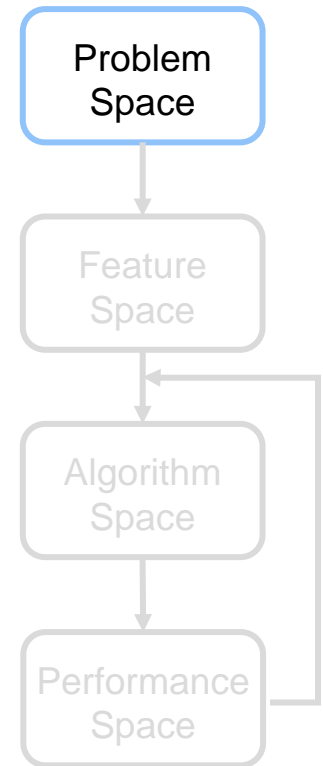
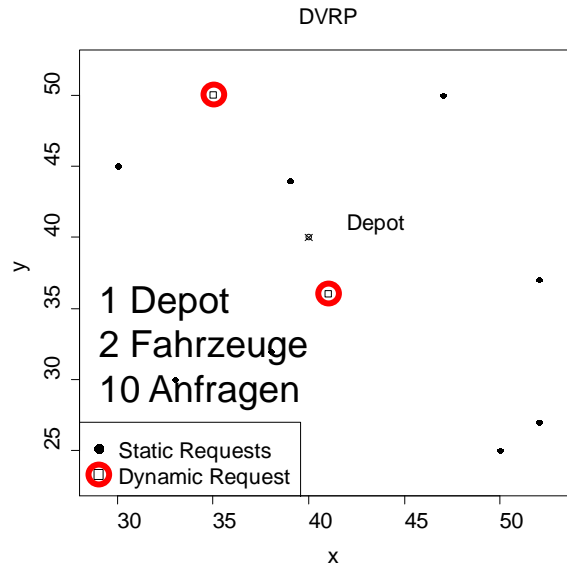
Welcher Algorithmus passt am besten zu **meinem Problem?**

* Dynamic Vehicle Routing Problem (dynamische Fahrzeugwegeplanung)

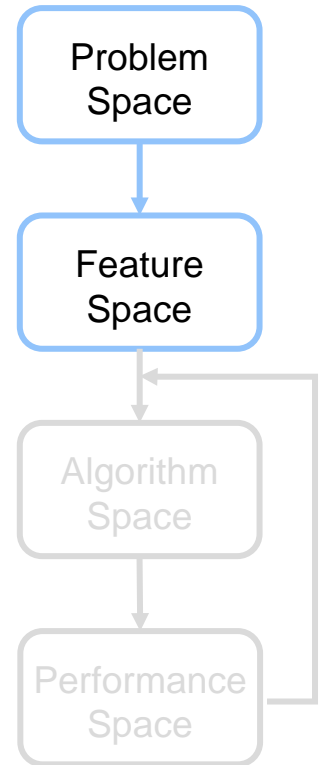
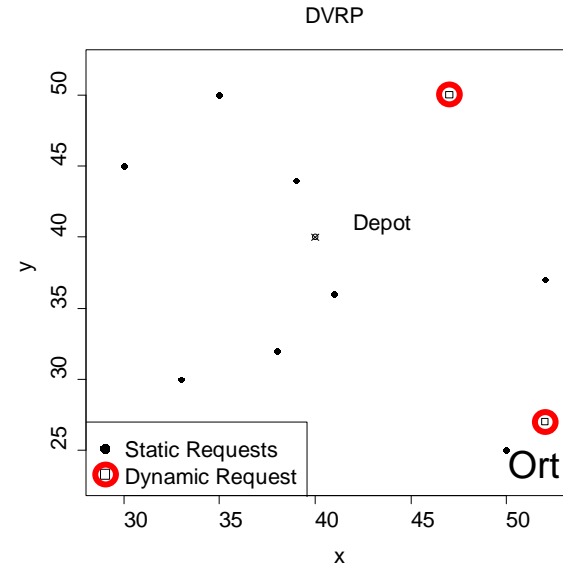
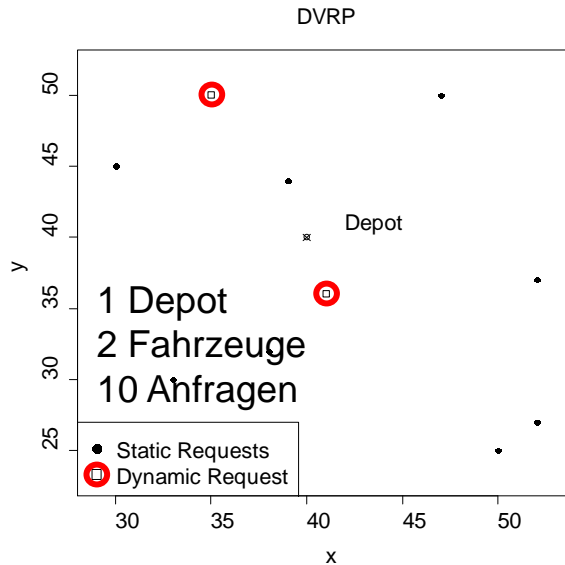
**Algorithm Selection Problem
(ASP), Rice 1979**



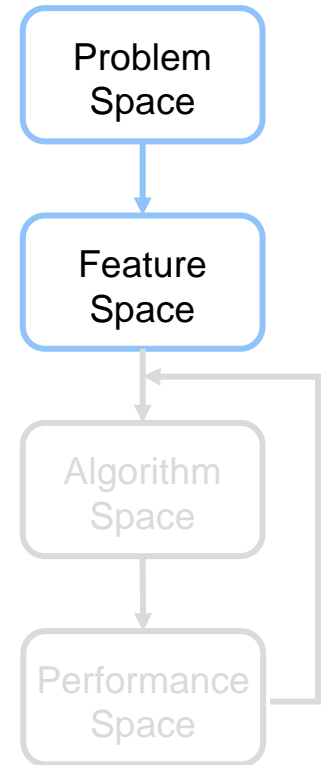
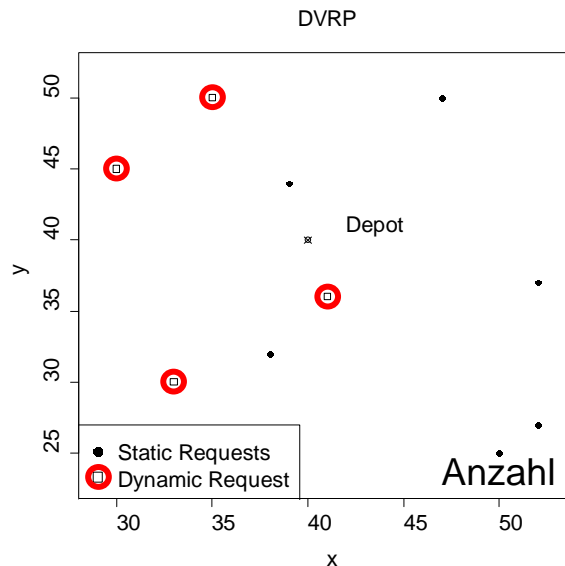
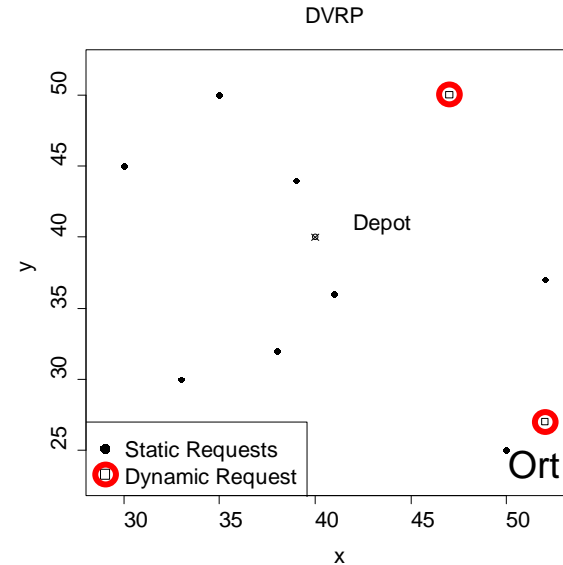
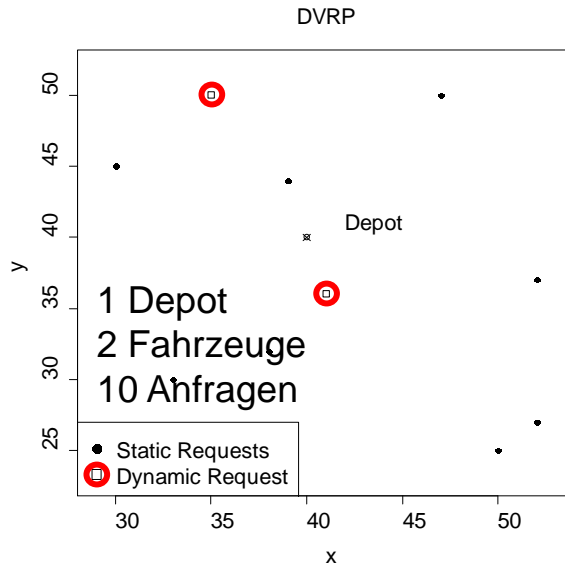
Algorithm Selection Problem



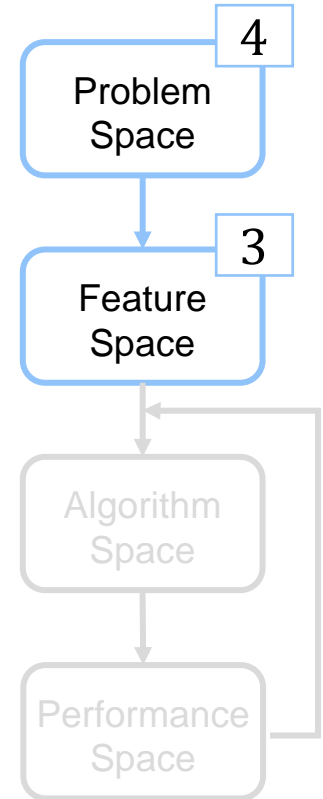
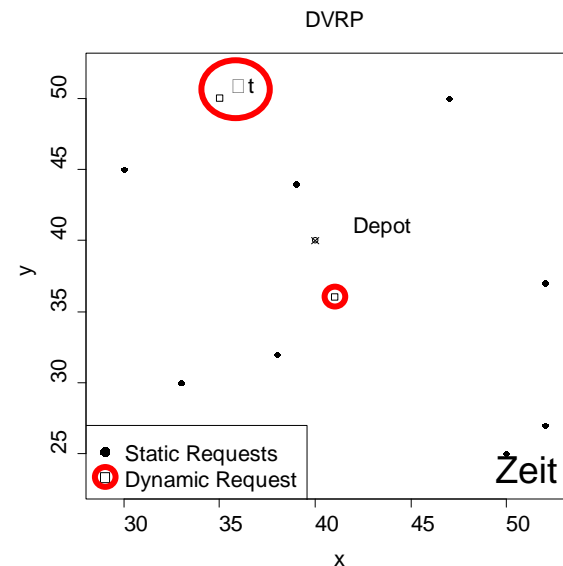
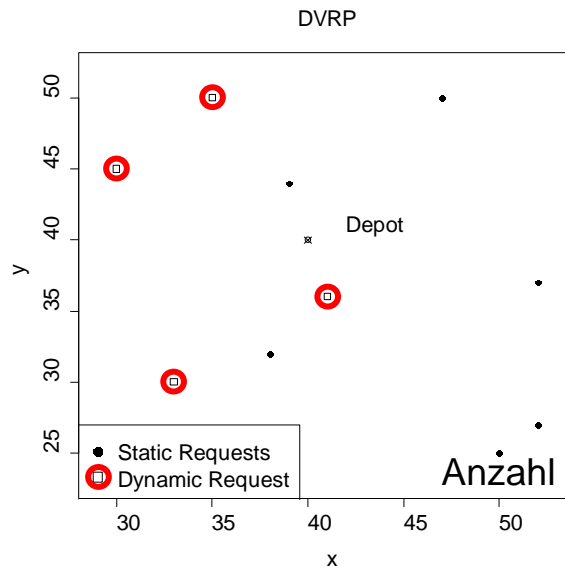
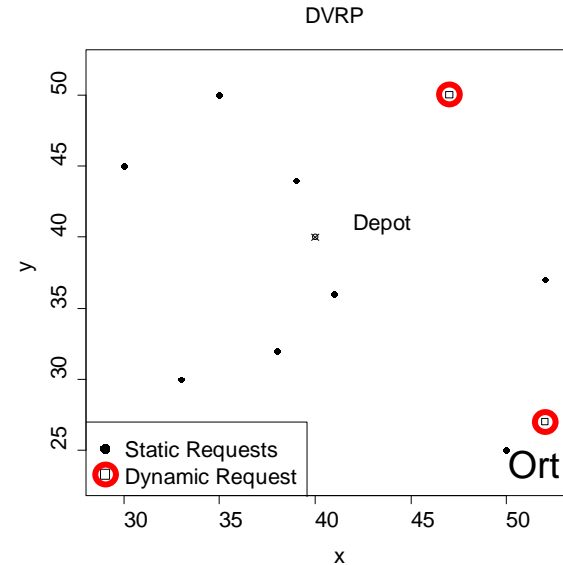
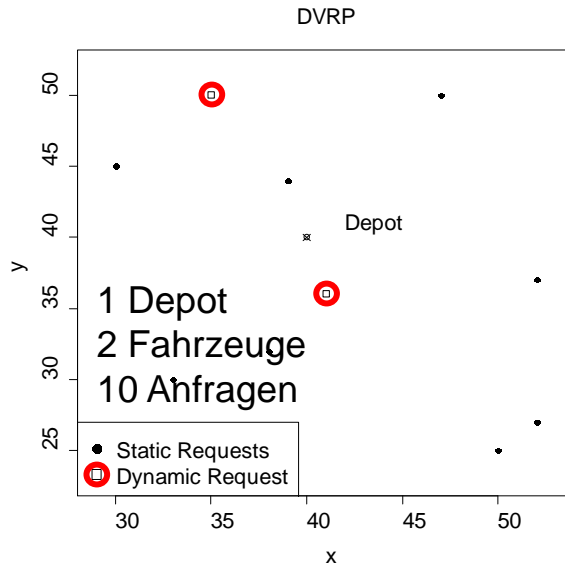
Algorithm Selection Problem



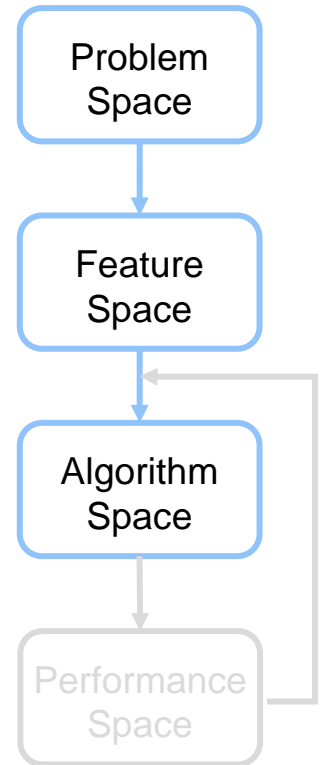
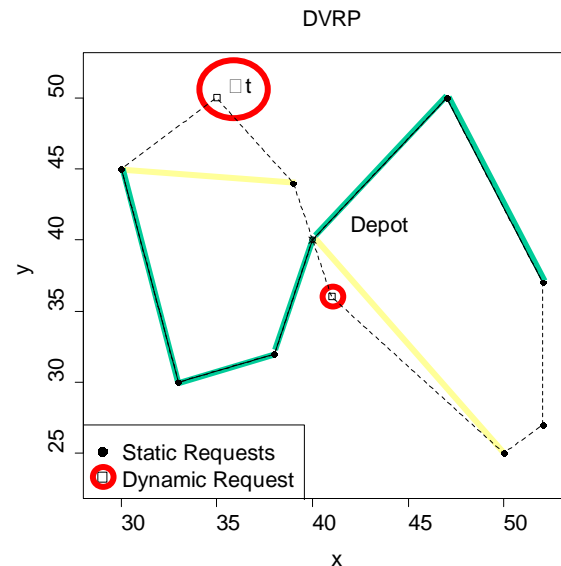
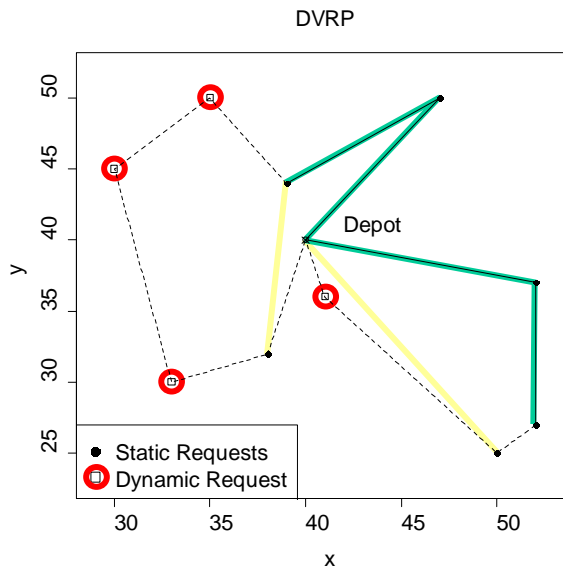
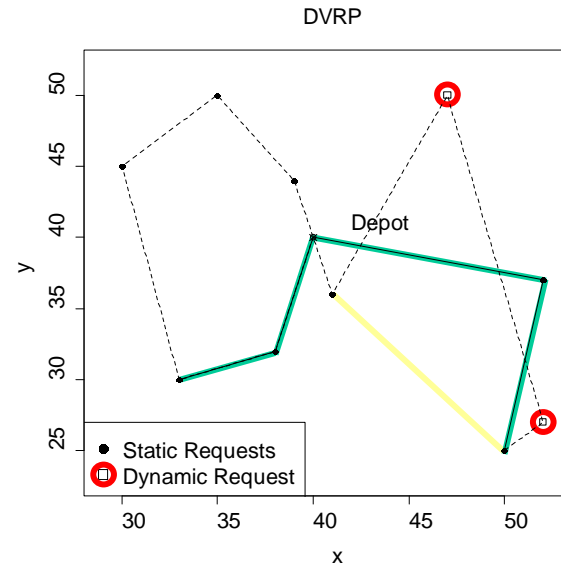
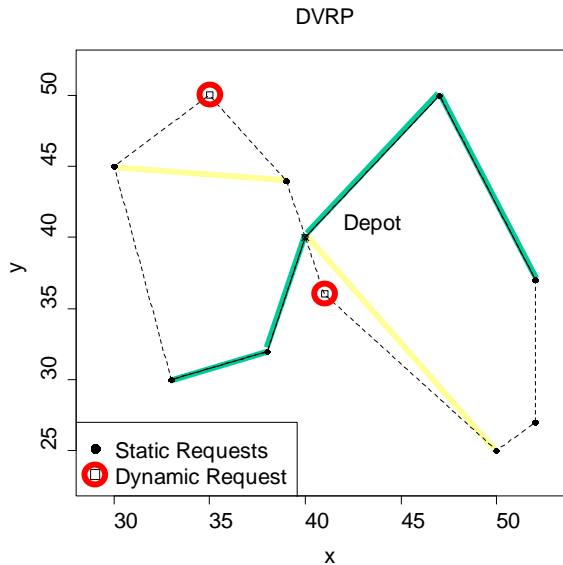
Algorithm Selection Problem



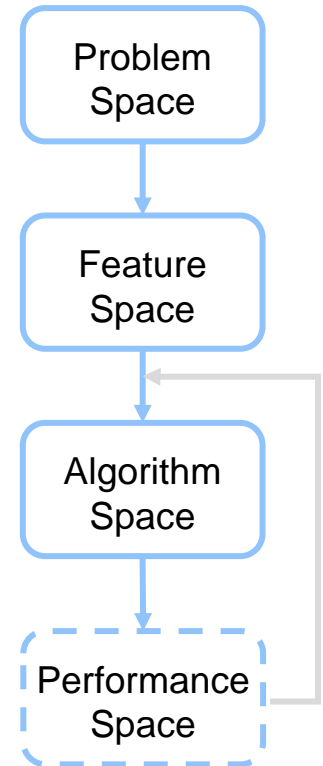
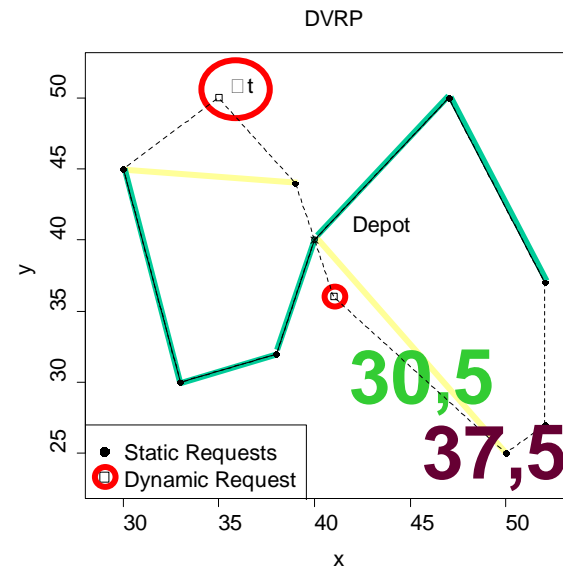
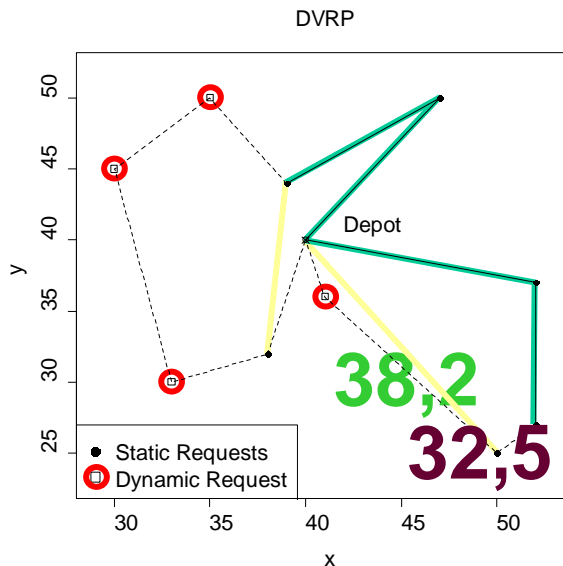
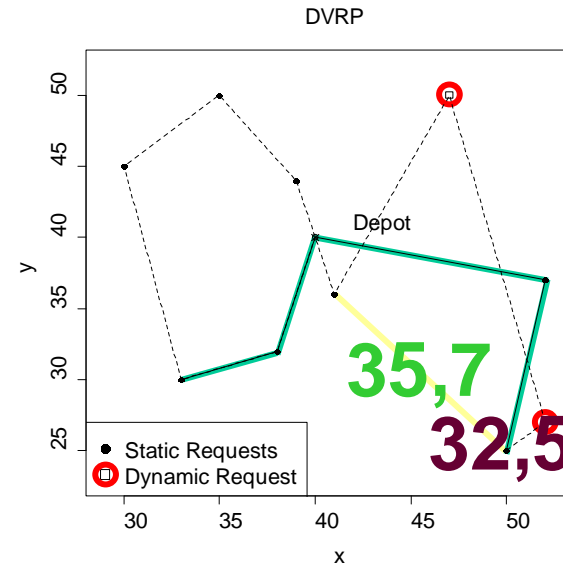
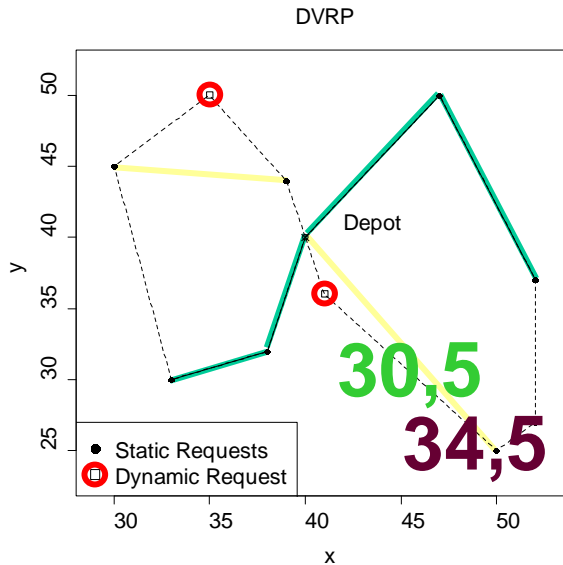
Algorithm Selection Problem



Algorithm Selection Problem

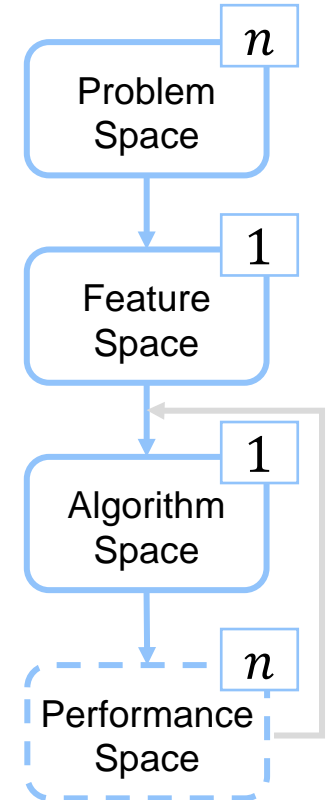
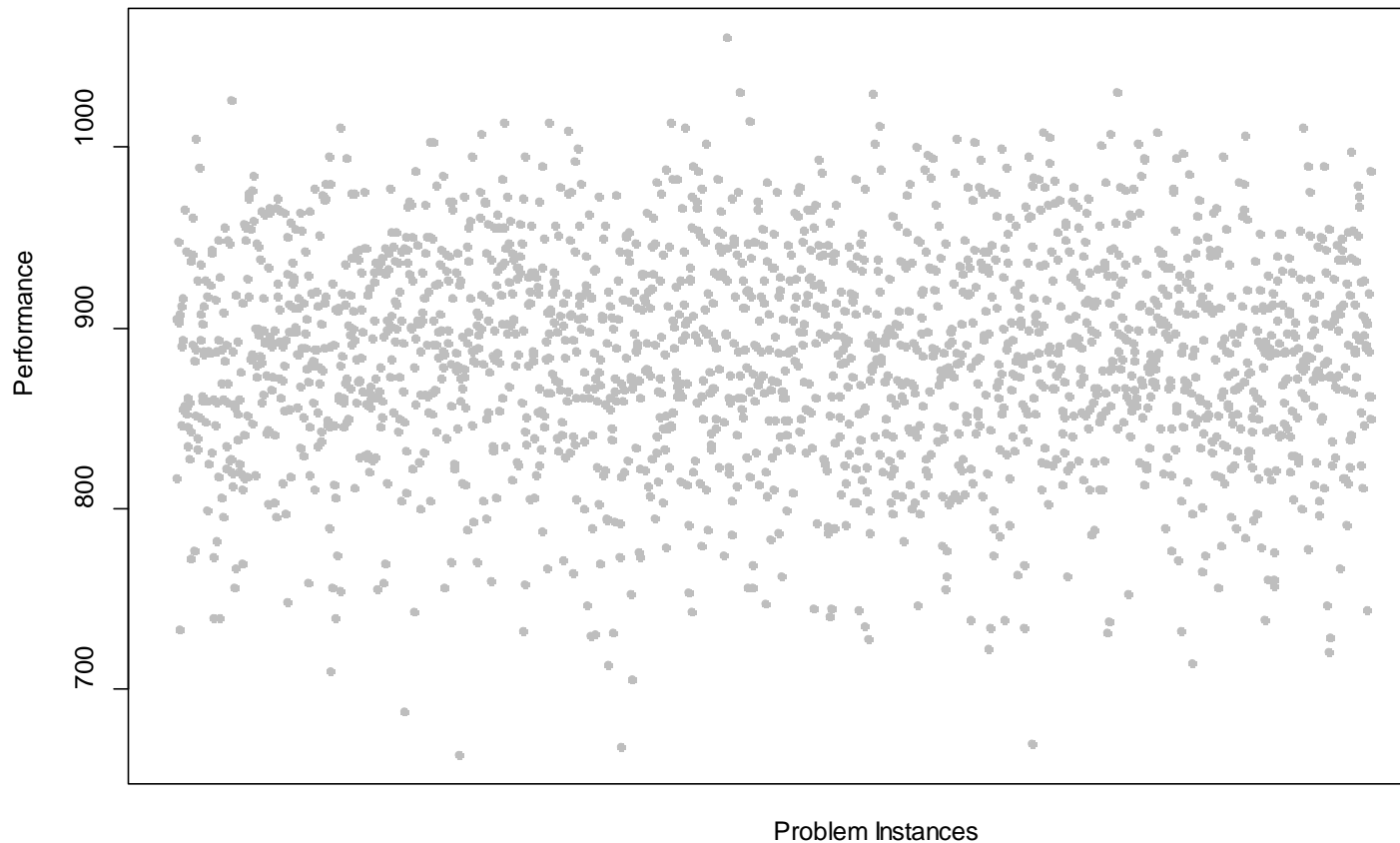


Algorithm Selection Problem



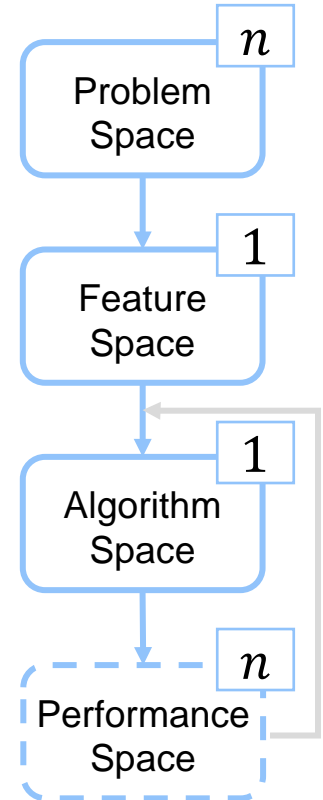
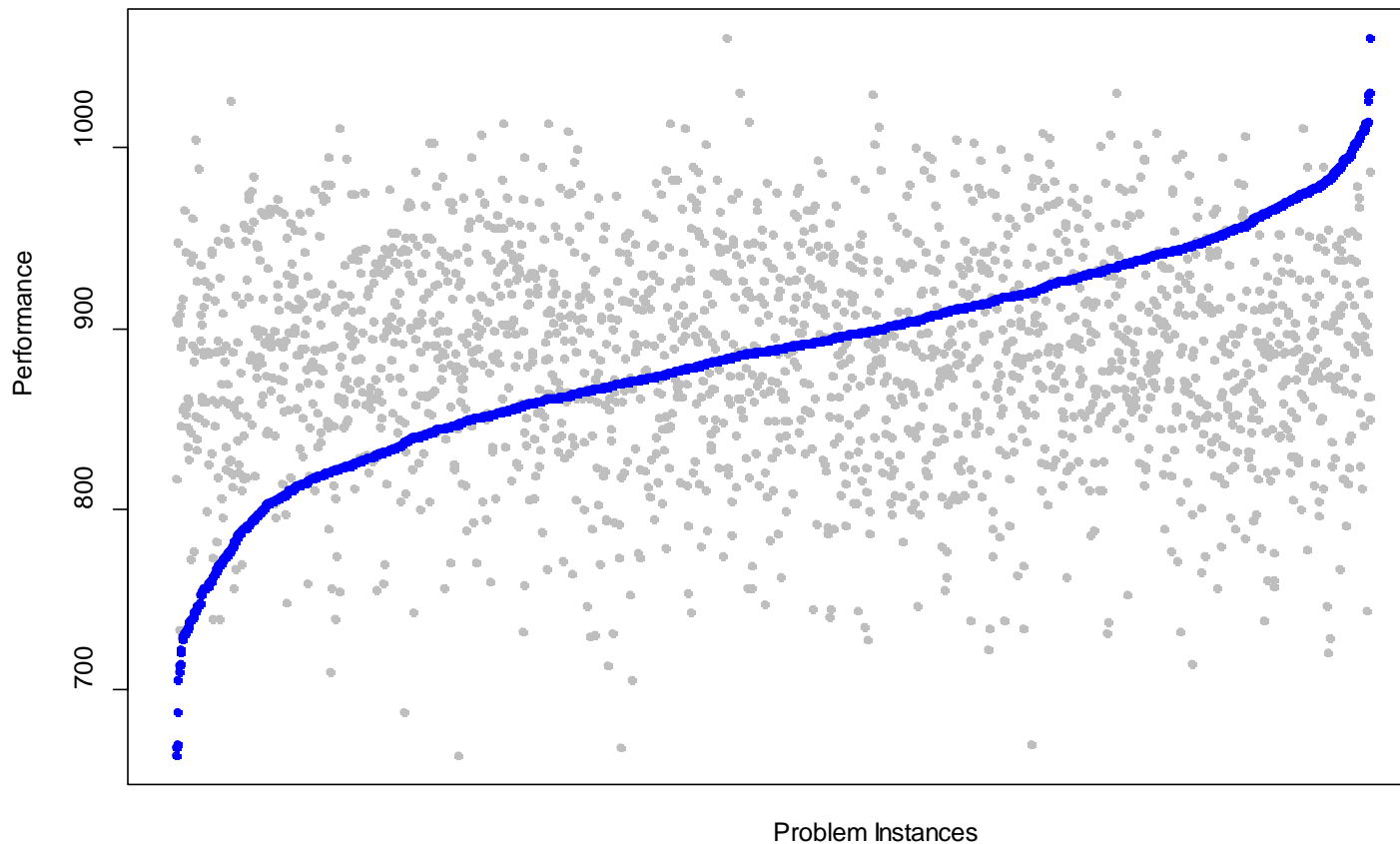
Algorithm Selection Problem

Results of the Data Farming Experiments



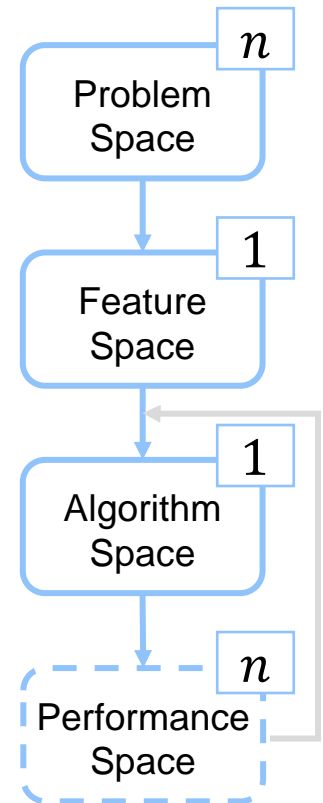
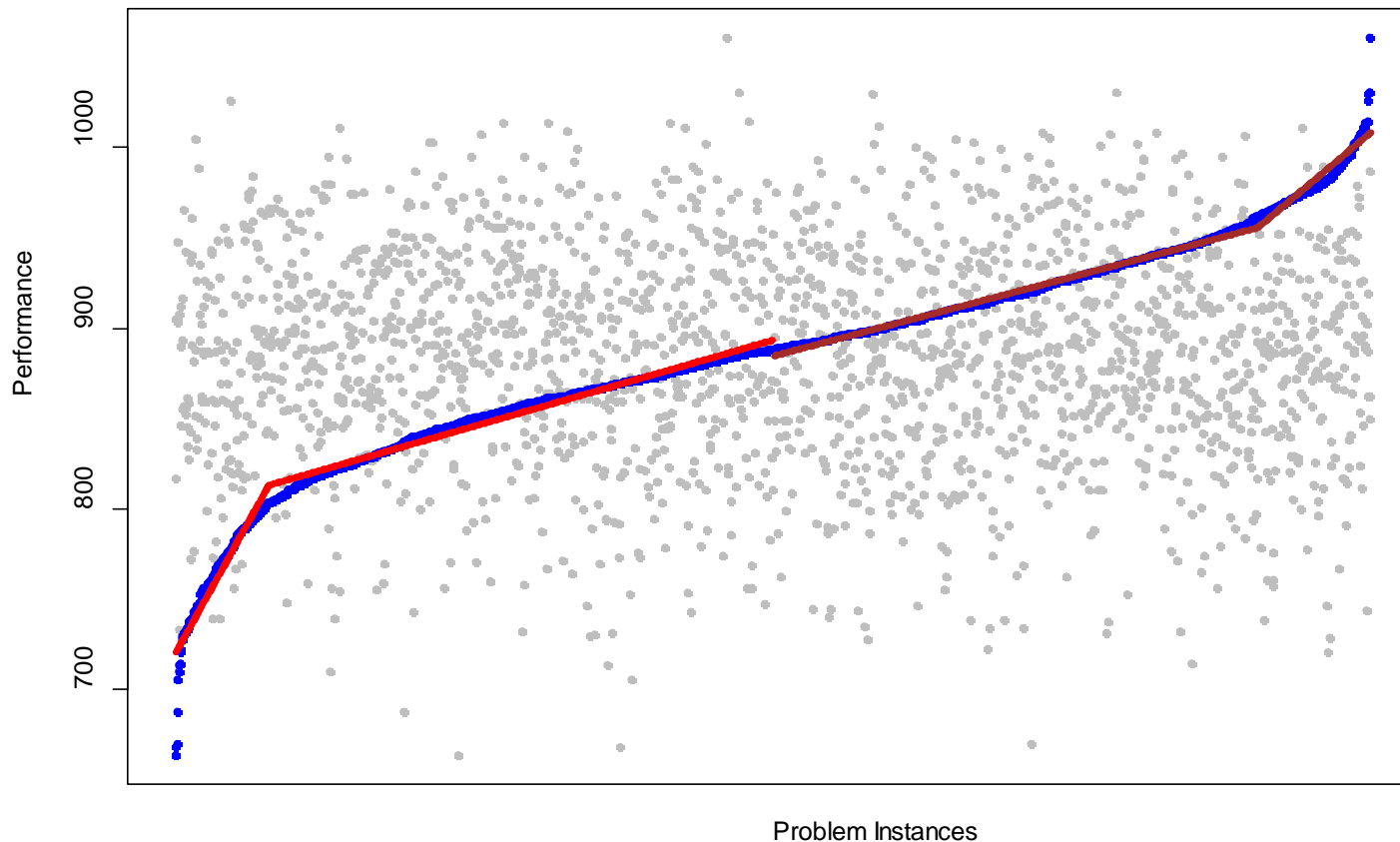
Algorithm Selection Problem

Results of the Data Farming Experiments



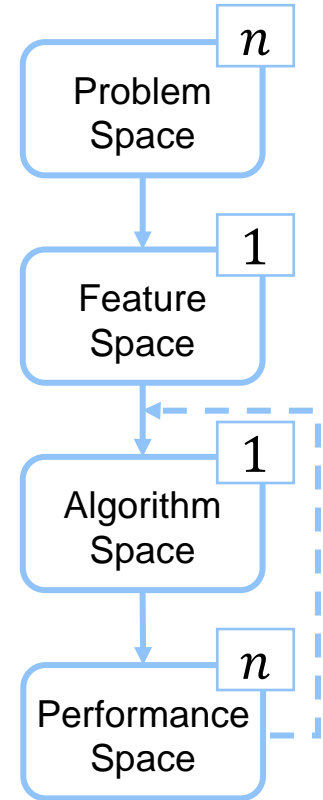
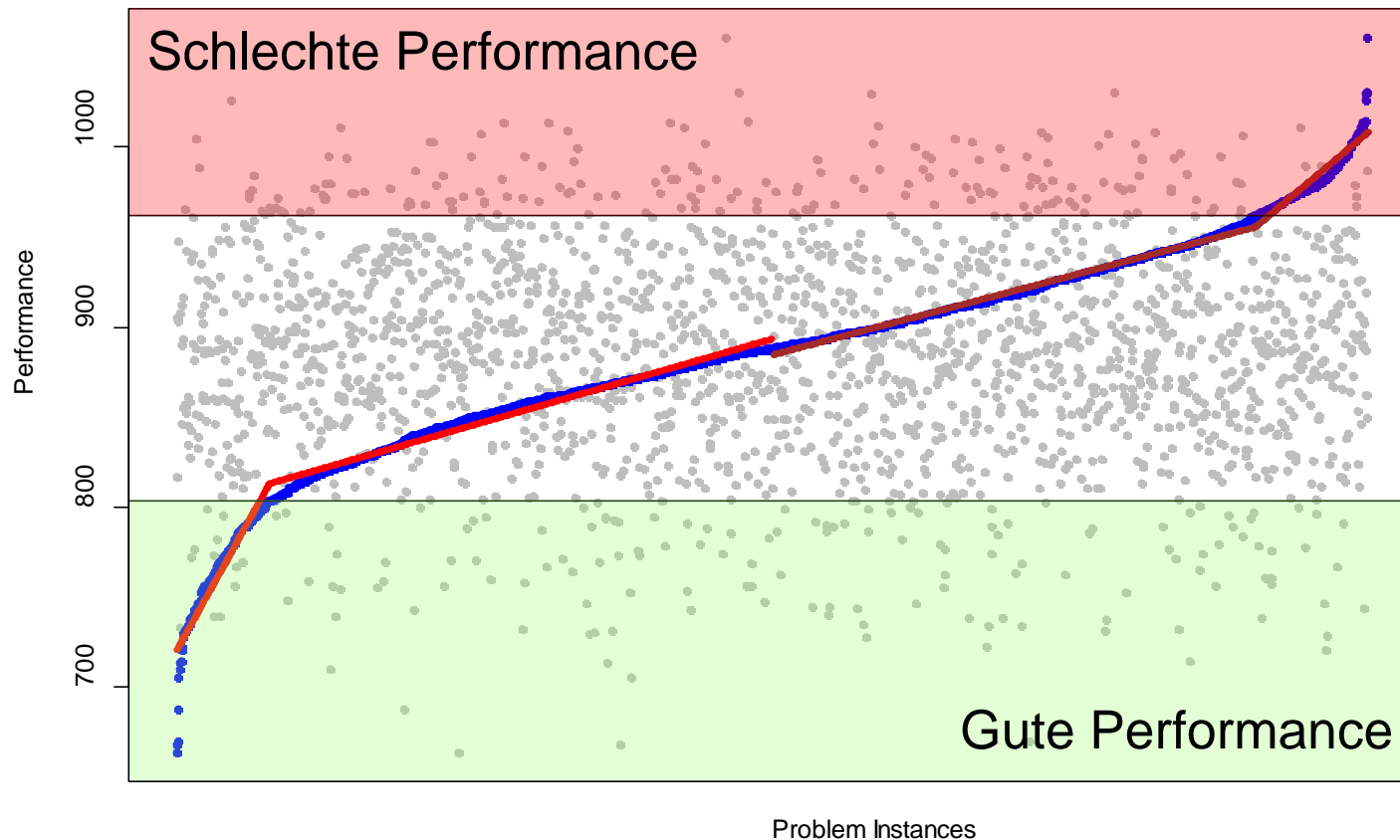
Algorithm Selection Problem

Results of the Data Farming Experiments

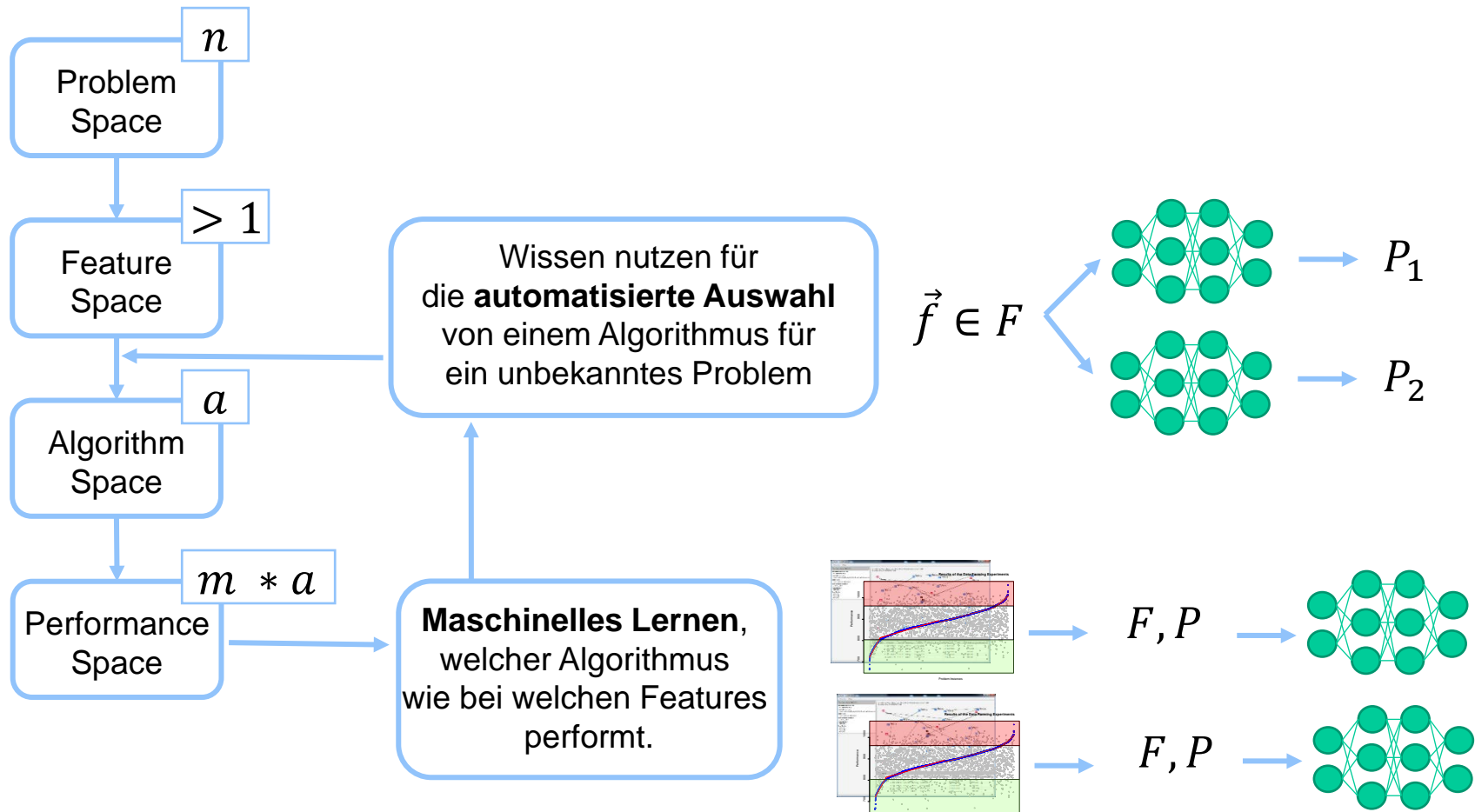


Algorithm Selection Problem

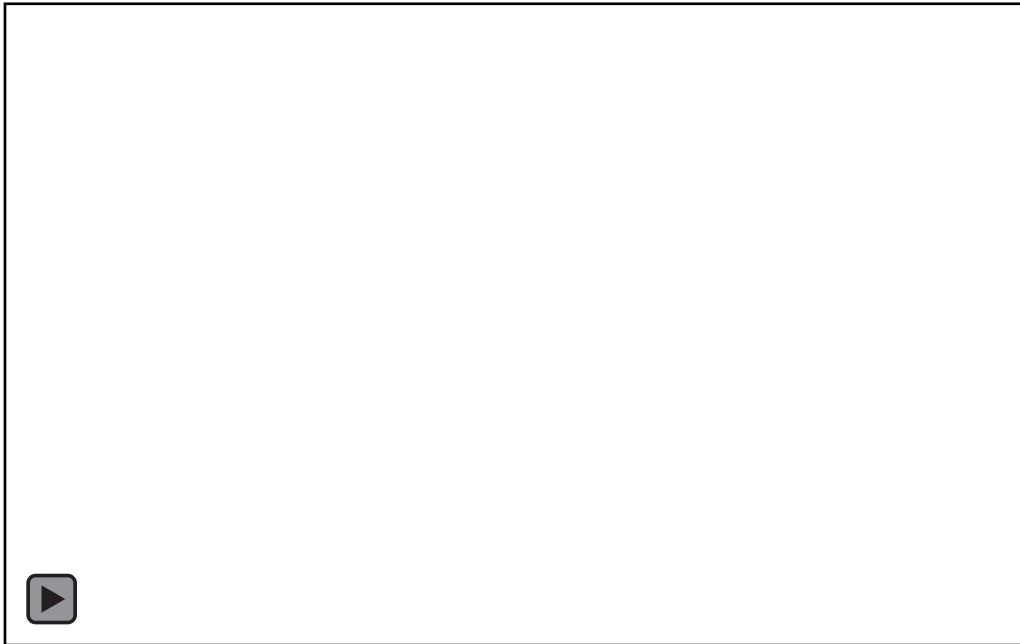
Results of the Data Farming Experiments



Algorithm Selection Problem

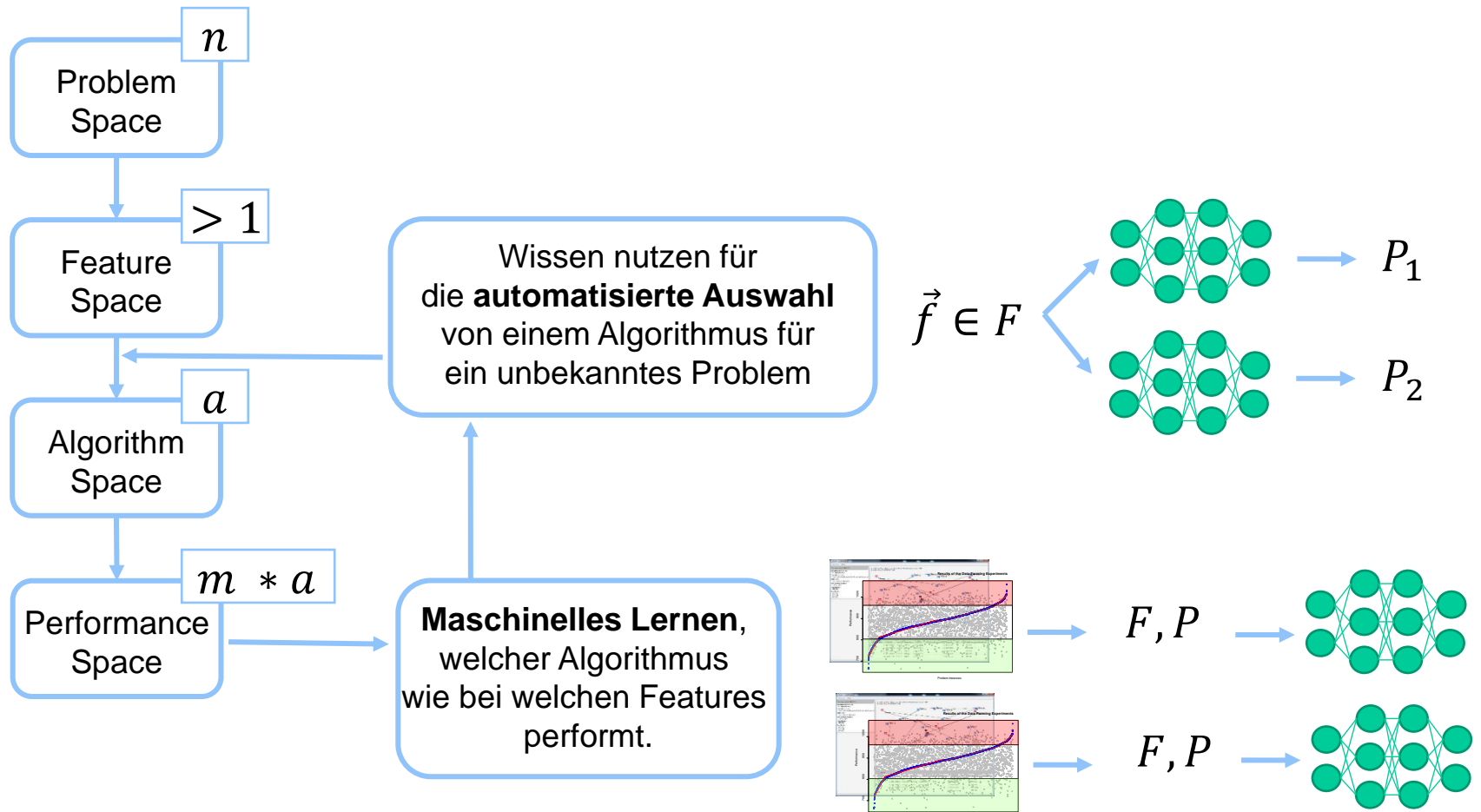


* F – Set of Feature Vectors, P – Performance



- Umsetzung des Konzepts,
 - Forschung nach geeigneten Features
 - Implementierung von Lösungsalgorithmen
- **Erprobung durch reale Problemstellungen**

*Vielen Dank für
die Aufmerksamkeit*



* F – Set of Feature Vectors, P – Performance