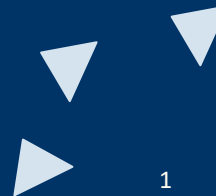




Lernen mit ALeA

Felix Grelka, Dominic Lohr, Marc Berges





Ganzheitliche daten- und wissensunterstützte Hochschulbildung und deren Gestaltung



Weiterentwicklung der Hochschulbildung auf drei Ebenen
mittels daten- & wissensbasierten Ansätzen von KI

IT-unterstütztes
LERNEN

VoLL-KI

KI-unterstütztes
LERNEN



Domänen und Kompetenz-
modellierung



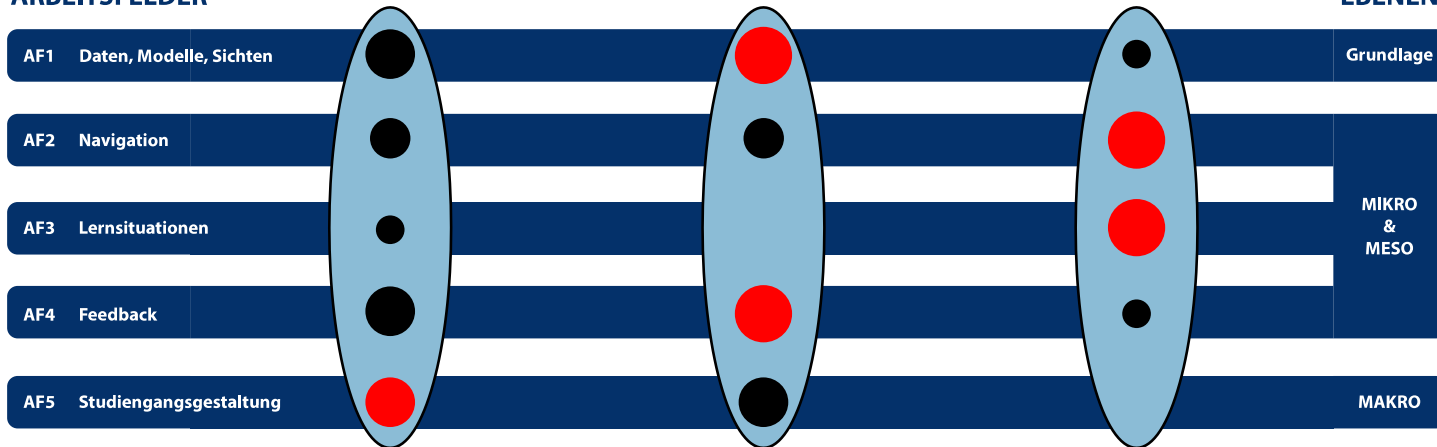
Datenbasierte Analysen,
Erklärungen und Hilfen



Individualisierte Lernnavigation
und Lernsituationen

ARBEITSFELDER

EBENEN



● Hauptverantwortlich

● Flächeninhalt indiziert
Umfang des inhaltlichen
Beitrags

Personalisierte adaptive Lernumgebungen (ALUs)

Verfügen über:

Domänenmodell

Konkretisierung in
annotiertem und
strukturiertem Lernmaterial

wird auch Wissensmodell
genannt

Lernendenmodell

Abschätzung des
Wissenstandes und der
Lernziele der
Lernenden

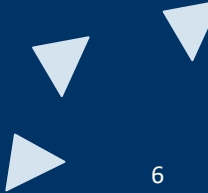
Didaktikmodell

formalisiertes didaktisches
Wissen um adaptiv auf
individuelle Anforderungen
der Lernenden reagieren zu
können



passgenaue Unterstützung z.B. durch Vorschlägen von Lernpfaden und Inhalten
oder durch dynamische Erstellung von Curricula möglich

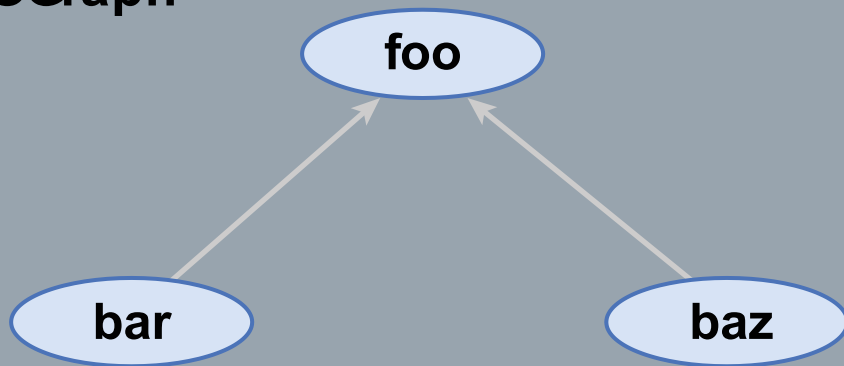
Domain Model



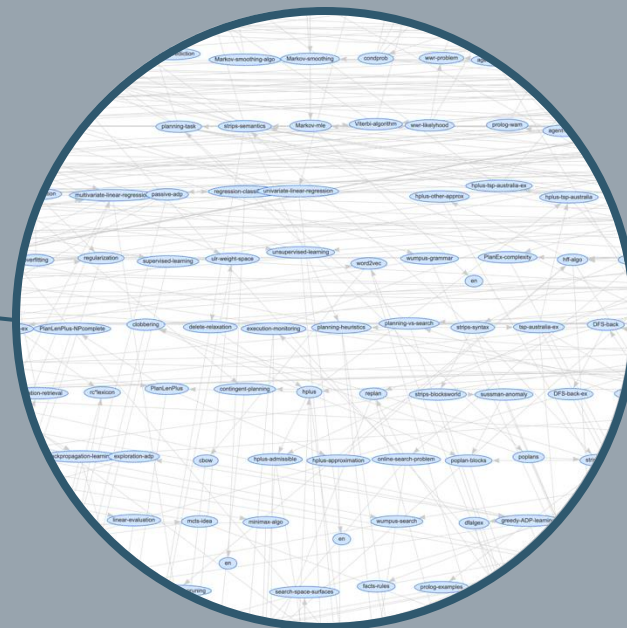
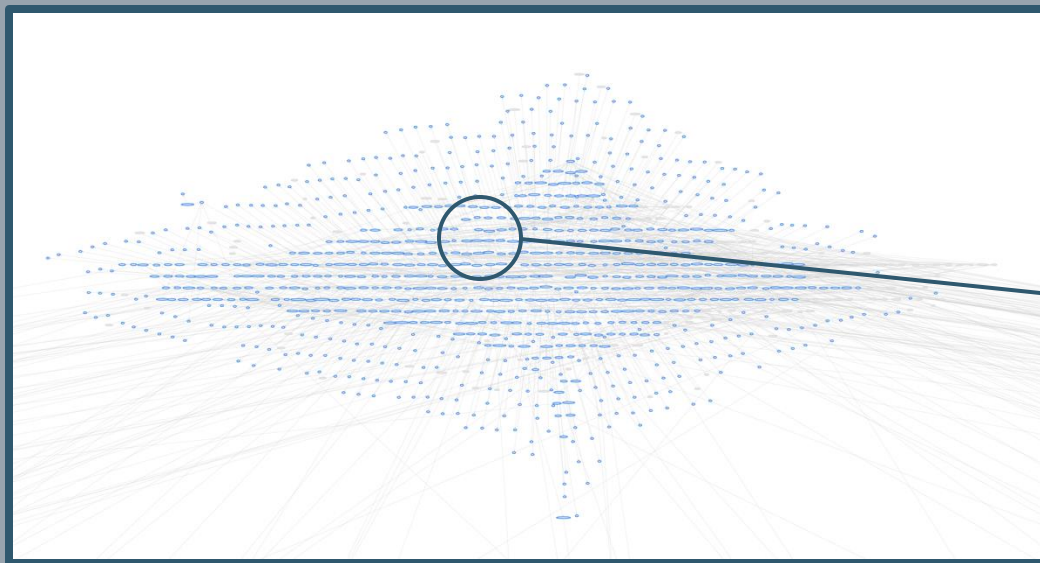
LOGraph

Definition 12.2.3. A **foo** is a **bar** with a **baz**.

LOGraph



LOGraph



Learning Object

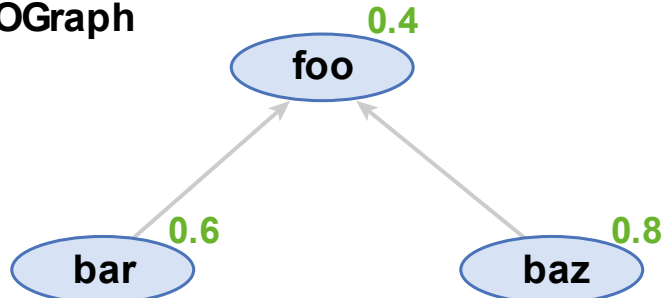
Learner Model



Learner Model

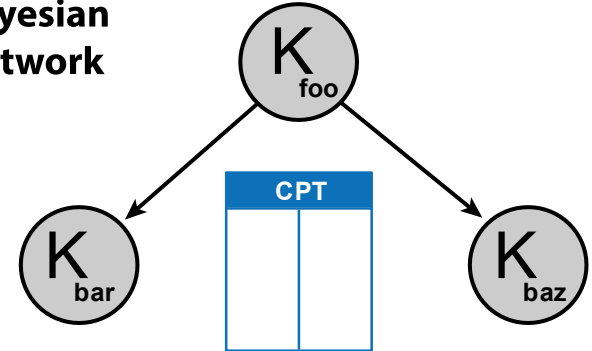
UM: $V \rightarrow [0,1]$

LOGraph



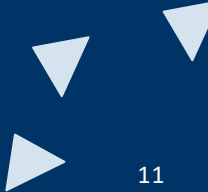
Update UM

Bayesian Network



Didaktik- Modell

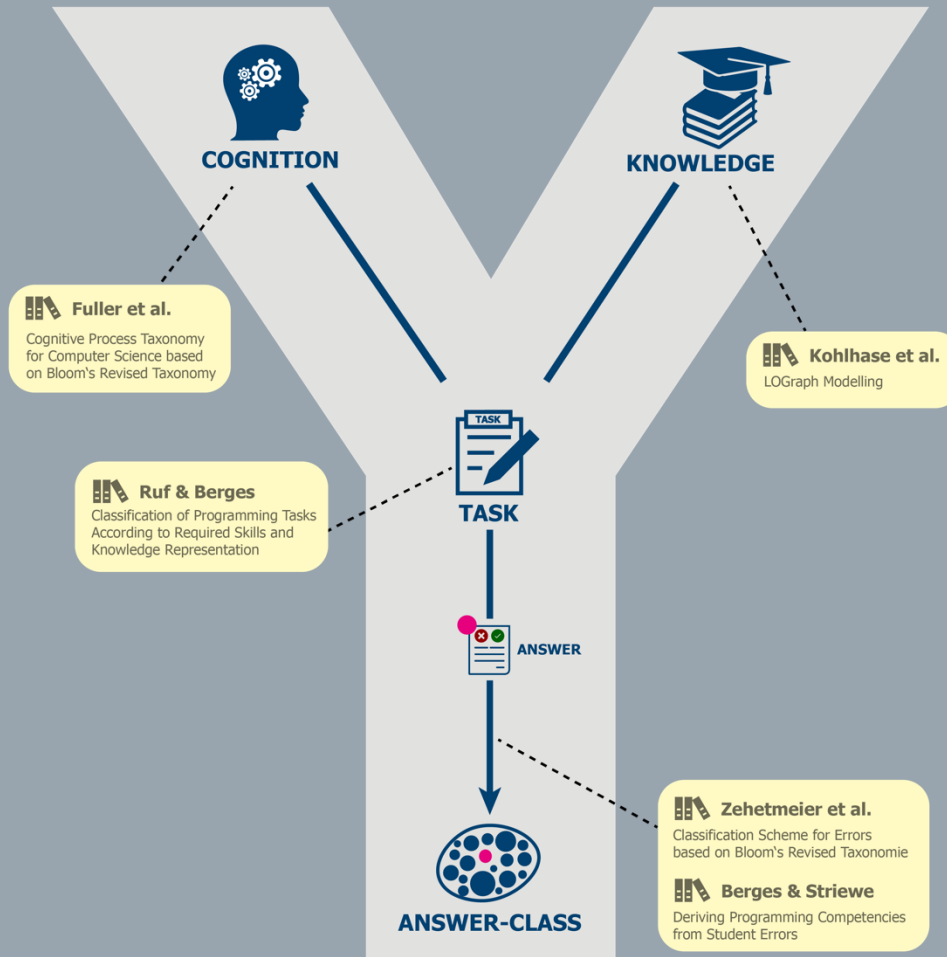
WANN?
WIE?



Wie lassen sich Learning Objects formalisieren, sodass sie in adaptiven Lernplattformen (didaktisch sinnvoll) eingesetzt werden können?

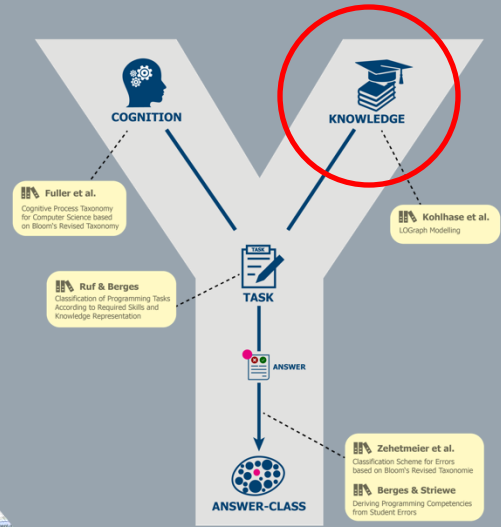
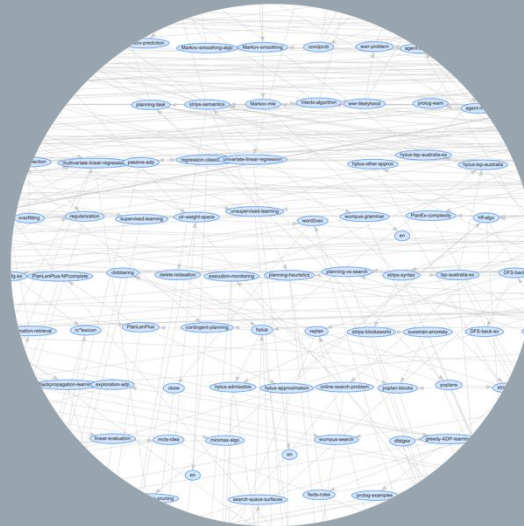
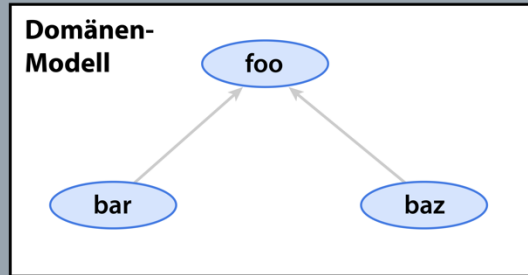


Y-Model



Knowledge

Definition 12.2.3. A **foo** is a **bar** with a **buz**.



semantic TeX (sTeX)

ohne sTeX

```
\sum_{n=1}^{\infty} \frac{1}{2^n} \rightarrow 1
```

sTeX

```
\documentclass{article}
\usepackage{stex}
\usepackage{xcolor}

\begin{document}
\usemodule[smglom/calculus]{series}
\usemodule[smglom/arithmetics]{realarith}

The \symref{series}{series}  $\sum_{n=1}^{\infty} \frac{1}{2^n}$ 
\realdive[frac]{1}{2}
\realpower{2}{n}
} \symref{converges}{converges} towards 1.

\end{document}
```

Compiling this document with `pdflatex` should yield the output

The series $\sum_{n=1}^{\infty} \frac{1}{2^n}$ converges towards 1.

Natural Deduction with Equality

▷ **Definition 1.1.3 (First-Order Logic with Equality).** We extend PL^1 with a new logical constant for equality $= \in \Sigma_2^p$ and fix its interpretation to $\mathcal{I}(=) := \{(x, x) \mid x \in \mathcal{D}\}$. We call the extended logic **first-order logic with equality**.

▷ **Definition 0.1.** A **first-order signature** consists of (all disjoint; $k \in \mathbb{N}$)

- ▷ **connectives:** $\Sigma_0 = \{T, F, \neg, \vee, \wedge, \Rightarrow, \Leftrightarrow, \dots\}$ (functions on truth values)
- ▷ **function constants:** $\Sigma_k^f = \{f, g, h, \dots\}$ (k -ary functions on individuals)
- ▷ **predicate constants:** $\Sigma_k^p = \{p, q, r, \dots\}$ (k -ary relations among individuals.)
- ▷ **(Skolem constants:** $\Sigma_k^{\text{sk}} = \{f_k^1, f_k^2, \dots\}$) (witness constructors; countably ∞)
- ▷ We take Σ_1 to be all of these together: $\Sigma_1 := \Sigma^f \cup \Sigma^p \cup \Sigma^{\text{sk}}$ and define $\Sigma := \Sigma_1 \cup \Sigma_0$.

where $\mathbf{C}[\mathbf{A}]_p$ if the formula $\mathbf{C}$ has a subterm $\mathbf{A}$ at position p and $[\mathbf{B}/p]\mathbf{C}$ is the result of replacing that subterm with $\mathbf{B}$.

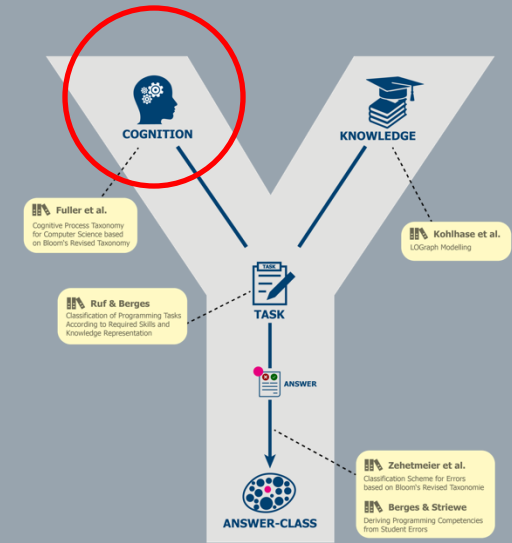
▷ In many ways **equivalence** behaves like **equality**, we will use the following rules in $\mathcal{ND}^1$

▷ **Definition 1.1.5.** $\Leftrightarrow I$ is **derivable** and $\Leftrightarrow E$ is **admissible** in $\mathcal{ND}^1$:

$$\frac{}{\mathbf{A} \Leftrightarrow \mathbf{A}} \Leftrightarrow I \qquad \frac{\mathbf{A} \Leftrightarrow \mathbf{B} \quad \mathbf{C}[\mathbf{A}]_p}{[\mathbf{B}/p]\mathbf{C}} \Leftrightarrow E$$

Kognition

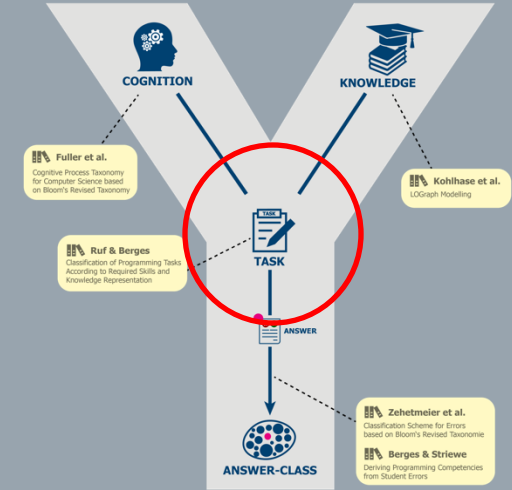
BLOOM ORIGINAL	BLOOM REVISED	THE KNOWLEDGE DIMENSION			
		FACTUAL	CONCEPTUAL	PROCEDURAL	META-COGNITIVE
KNOWLEDGE	→ REMEMBER				
COMPREHENSION	→ UNDERSTAND				
APPLICATION	→ APPLY				
ANALYSIS	→ ANALYZE				
SYNTHESIS	↗ EVALUATE				
EVALUATION	↘ CREATE				



Tasks / Learning Objects

```
5 \begin{problem}[id=prob.erdia1,creators=Richard Lenz]
6 \problem{...}
7
8 \precondition{understand}{none}{n1rel}
9 \precondition{understand}{none}{Chen-notation} % redundant with \symname[u]
10 \precondition{remember}{none}{entity}% redundant with \symname[r]
11 \precondition{remember}{none}{relation} % redundant ..
12
13 \objective{understand}{none}{n1rel}
14 \objective{understand}{none}{Chen-notation}
15
16 \cmgraphics[width=5cm]{db/PIC/erdia1}
17
18 Assume that there are three \symref{entity}{entitles} of type SAS and five
19 \symref{entity}{entitles} of type SBS. How many \symname{posins}{relation} of type
20 SAS are the at most?
21
22 \ifgen
23 \begin{mc}
24 \acc(T){S}
25 \acc(F, feedback=
26 \acc(F, feedback=
27 \acc(F, feedback=
28 \acc(F, feedback=
29 \end{mc}
30 \else
31 \fillsal(S)
32 \fi
33
34 \answerclass(A1){pat
35 \answerclass(A2){pat
36 \answerclass(A3){pat
37 \answerclass(A4){pat
38 \answerclass(A99){pa
39
40 \end{problem}
41 \end{document}
```

```
6 \usemodule{db/mod:db}
7
8 \precondition{understand}{none}{n1rel}
9 \precondition{understand}{none}{Chen-notation} % redundant with \symname[u]
10 \precondition{remember}{none}{entity}% redundant with \symname[r]
11 \precondition{remember}{none}{relation} % redundant ..
12
13 \objective{understand}{none}{n1rel}
14 \objective{understand}{none}{Chen-notation}
15
```

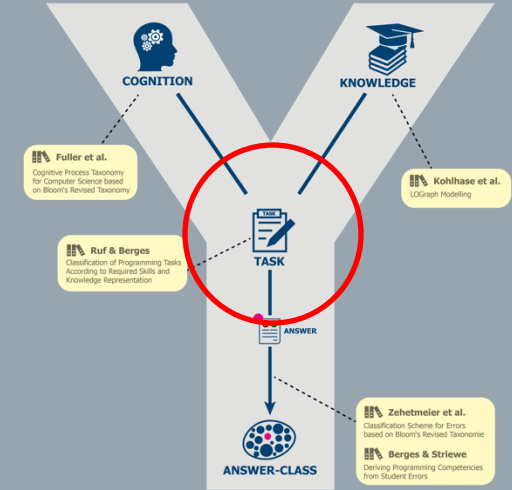


Tasks / Learning Objects

```

5 \begin{problem}[id=prab.erdia1,creators=Richard Lenz]
6 \begin{subproblem}[id=prab.erdia1.1]
7 \usesstyle{db/mod1db}
8 \precondition{understand}{none}{nrel}
9 \precondition{understand}{none}{Chen-notation} % redundant with \sysname{u}
10 \precondition{remember}{none}{entity} % redundant with \sysname{r}
11 \precondition{remember}{none}{relation} % redundant with \sysname{r}
12 \objective{understand}{none}{nrel}
13 \objective{understand}{none}{Chen-notation}
14 \cwhgraphics[width=5cm]{db/PIC/erdia1}
15
16 Assume that there are three \sysref{entity}{entities} of type SAS and five
17 \sysref{entity}{entities} of type SBS. How many \sysname{posits}[relation] of type
18 SAS are the at most?
19
20 \ifgen
21 \begin{mc}
22 \acc{T}{S}
23 \acc{F, feedback= (Note the notation direction of the \sysname{Chen-notation})
24 \acc{F, feedback= (Note that this is an \sysref{nrel}{N:1} relationship). What
25 you consider instead?}{I}{S} \acc{N}
26 \acc{F, feedback= (Note that this is an \sysref{nrel}{N:1} relationship). What
27 you consider instead?}{I}{N}
28 \acc{F, feedback= (Rubbish)!}{Math.Randell} \acc{Klasse}
29 \end{mc}
30 \else
31 \fillnsal(S)
32 \fi
33
34 \answerclass{A1}{path to A1.tex}{Correct Solution}
35 \answerclass{A2}{path to A2.tex}{1:N instead of N:1}
36 \answerclass{A3}{path to A3.tex}{N:M instead of N:1}
37 \answerclass{A4}{path to A4.tex}{1:1 instead of N:1}
38 \answerclass{A99}{path to A99.tex}{Other} %Restklasse
39
40 \end{problem}
41 \end{document}

```



```

34 \answerclass{A1}{path to A1.tex}{Correct Solution}
35 \answerclass{A2}{path to A2.tex}{1:N instead of N:1}
36 \answerclass{A3}{path to A3.tex}{N:M instead of N:1}
37 \answerclass{A4}{path to A4.tex}{1:1 instead of N:1}
38 \answerclass{A99}{path to A99.tex}{Other} %Restklasse
39

```

Antworten auf Aufgaben

- *Ergebnis* der Anwendung kognitiver Prozesse auf Lerninhalte
- wertvolle *Informationsquelle* im Kontext Lehre
- geben Evidenz über aktuellen *Lernstand*

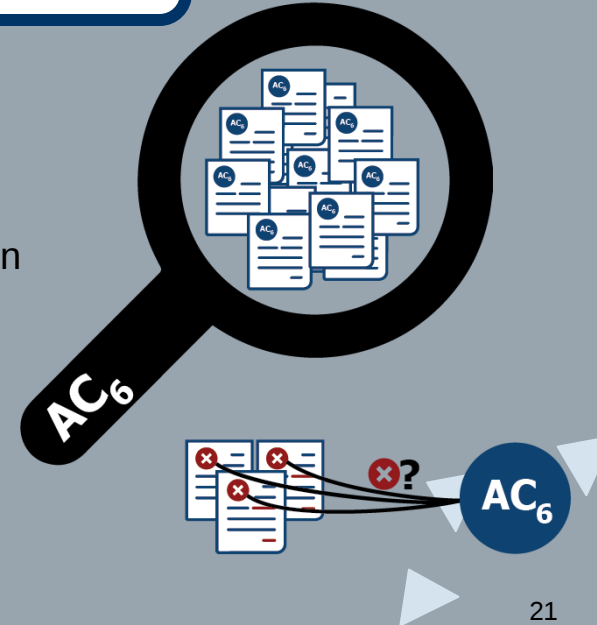
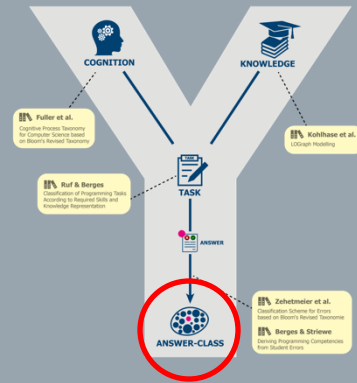


Antwortklasse (AC)

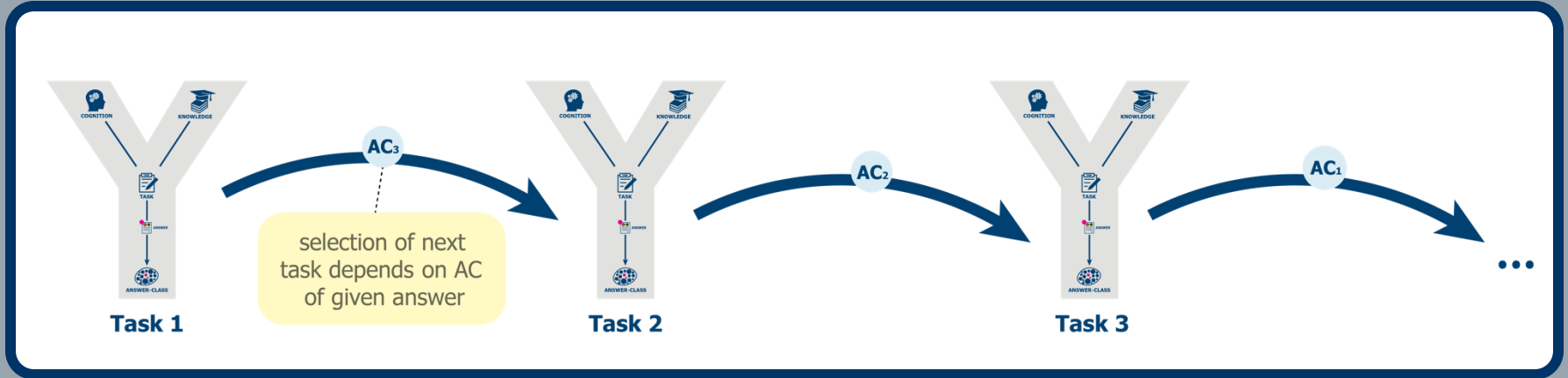
$$AC_x = \{R \mid R \text{ meets all the requirements of description } B\}$$

- Clustering von Antworten zu *Antwortklassen*
- *beobachtbare (objektive) Kriterien*
- Antwortklassen sind *nicht disjunkt*
→ Antworten können in mehreren verschiedenen Antwortklassen liegen

ID	answer class
AC ₁	{ <i>R</i> <i>R</i> compiles with Java-Compiler Version X}
AC ₂	{ <i>R</i> <i>R</i> includes a syntax error}
AC ₃	{ <i>R</i> <i>R</i> outputs the minimum of an array correctly}
AC ₄	{ <i>R</i> <i>R</i> includes a while- or for-loop}
AC ₅	{ <i>R</i> use of <code>System.out.println</code> instead of <code>return</code> }
AC ₆	{ <i>R</i> use of Java API}
AC ₇	{ <i>R</i> edge case for empty array is missing}



Selektion von (Folge-)Aufgaben



Feedback



AssertionError(Geometrie.umfangRegelmaessigesVieleck(42, 0.815_4711_666) => 34.2497889972 expected:<34.2497889972> but was:<-1.0>)

```
7 public class Geometrie {
8     // computes and returns the circumference of a
9     // regular polygon with n edges of length a
10    public static double umfangRegelmaessigesVieleck(int n, double a) {
11        // TODO:
12        double seitenlaenge = Math.abs(a);
13        int seitenanzahl = n;
14        double umfangRegekmaessigesVieleck = (seitenlaenge * seitenanzahl);
15
16        System.out.println("Der Umfang ist:" + umfangRegelmaessigesVieleck);
17        return -1;
18    }
19
20    // computes and returns the circumference of a circle with radius r
21    // (hint: use Math.PI for a precise value of PI)
22    public static double umfangKreis(double r) {
23        // TODO:
24        double durchmesser = 2*r;
25        double umfangKreis = Math.PI * durchmesser;
26
27        System.out.println("Der Umfang ist:" + umfangKreis);
28
29        return -1;
30    }
31
32    // computes and returns the surface area of a trapezium (aka trapezoid)
33    // with base edge a, opposite edge c, and height h
34    public static double flaecheTrapez(double a, double c, double h) {
35        // TODO:
36        double edge = Math.abs(a);
37        double oppositeEdge = Math.abs(c);
38        double height = Math.abs(h);
39
40        double flaecheTrapez = (((edge + oppositeEdge) / 2) * height);
41
42        System.out.println("Die Flaeche ist:" + flaecheTrapez);
43
44        return -1;
45    }
46
47    // computes and returns the volume of a square pyramid
48    // with base length a and height h
49    public static double volumenPyramide(double a, double h) {
50        // TODO:
51        double length = Math.abs(a);
52        double height = Math.abs(h);
53
54        double volumenPyramide = (((length * length) * height) / 3);
55
56        System.out.println("Das Volumen ist:" + volumenPyramide);
57        return -1;
58    }
59 }
```

Feedback



?

```
7 public class Geometrie {
8     // computes and returns the circumference of a
9     // regular polygon with n edges of length a
10    public static double umfangRegelmaessigesVieleck(int n, double a) {
11        // TODO:
12        double seitenlaenge = Math.abs(a);
13        int seitenanzahl = n;
14        double umfangRegekmaessigesVieleck = (seitenlaenge * seitenanzahl);
15
16        System.out.println("Der Umfang ist:" + umfangRegelmaessigesVieleck);
17        return -1;
18    }
19
20    // computes and returns the circumference of a circle with radius r
21    // (hint: use Math.PI for a precise value of PI)
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23        // TODO:
24        double durchmesser = 2*r;
25        double umfangKreis = Math.PI * durchmesser;
26
27        System.out.println("Der Umfang ist:" + umfangKreis);
28
29        return -1;
30    }
31
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41
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43
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46
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52        double height = Math.abs(h);
53
54        double volumenPyramide = (((length * length) * height) / 3);
55
56        System.out.println("Das Volumen ist:" + volumenPyramide);
57        return -1;
58    }
59 }
```



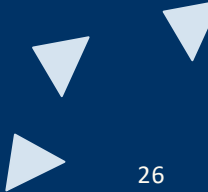
Adaptive Learning Assistant



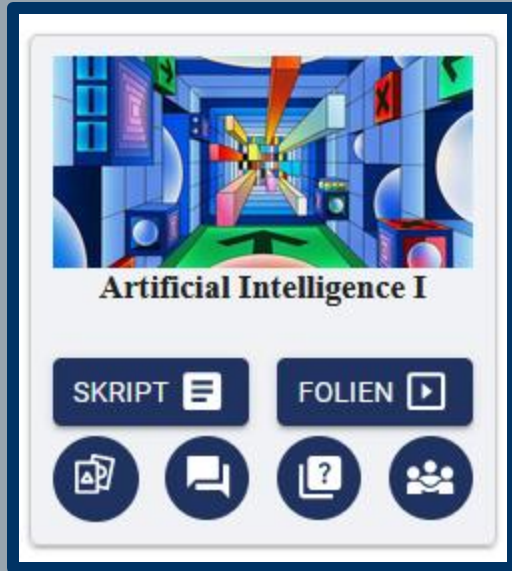
alea.education



Features von ALeA (Auswahl)



Interaktion mit Lernmaterialien



The main interface of the course, titled "Artificial Intelligence I". It features a colorful, abstract background with geometric shapes and a central perspective view of a hallway. Below the image is the title "Artificial Intelligence I". Underneath the title are two rows of buttons: the first row contains "SKRIPT" (with a document icon), "FOLIEN" (with a play icon), "KARTEN" (with a card icon), and "FORUM" (with a speech bubble icon); the second row contains "QUIZZE" (with a question mark icon), "HAUSAUFGABEN" (with a checkmark icon), "STUDY BUDDY" (with a group of people icon), and "ÜBUNGSAUFGABEN" (with a document icon). Below these buttons is a search bar with the placeholder text "Search in notes...". At the bottom, there is a paragraph of text and a list of five topics.

Artificial Intelligence I

SKRIPT FOLIEN KARTEN FORUM

QUIZZE HAUSAUFGABEN STUDY BUDDY ÜBUNGSAUFGABEN

Search in notes...

Diese Vorlesung ist der erste Teil einer zwei-semestrigen Einführung in die Künstlichen Intelligenz (KI). Sie beschäftigt sich mit den Grundlagen der symbolischen KI, insbesondere:

1. Agentenmodelle als Grundlagen der KI
2. Logisches Programmieren in Prolog
3. Heuristische Suche als Methode zum Problemlösen
4. Adversarielle Suche (Strategiespiele) mittels heuristischer Suche
5. Probleme unter Rand- oder Nebenbedingungen (Constraint Propagation)

Interaktion mit Lernmaterialien

(Ka

Wählen Sie ein Kartenset

Overview over AI and Topics of AI-II

☐ What is Artificial Intelligence? 3/3 Konzepte	WIEDERHOLEN	LERNEN ✕
☐ Artificial Intelligence is here today! 1/1 Konzepte	WIEDERHOLEN	LERNEN ✕
☒ Ways to Attack the AI Problem 7/7 Konzepte	WIEDERHOLEN	LERNEN ✕
☐ Agents and Environments in AI2 40/40 Konzepte	WIEDERHOLEN	LERNEN ✕

Reasoning with Uncertain Knowledge

☒ Quantifying Uncertainty 30/33 Konzepte	WIEDERHOLEN	LERNEN ✕
☐ Probabilistic Networks	Reasoning: Bayesian	WIEDERHOLEN LERNEN ✕

Wählen Sie Kompetenzstufen

Die Auswahl legt alle Karten bis zur gewählten Kompetenzstufe auf den Stapel.





☒ Übungskarten mischen

WIEDERHOLEN

LERNEN ✕

37 Karten ausgewählt

Felix Grelka, Dominic Lohr, Marc Berges – Lernen mit ALeA

31.10.2024

28

Interaktion mit Lernmaterialien

(Karte)

symbolic AI

Beurteilen Sie Ihre Kompetenz:

🧠 😐 😐 😐 😐 😐

💡 😐 😐 😐 😐 😐

↺ ↻ ↻ ↻ ↻ ↻

< VORHERIGE NÄCHSTE >



Definition 0.1. Symbolic AI is a subfield of AI based on the assumption that many aspects of intelligence can be achieved by the manipulation of symbols, combining them into meaning-carrying structures (expressions) and manipulating them (using processes) to produce new expressions.

Beurteilen Sie Ihre Kompetenz:

🧠 😐 😐 😐 😐 😐

💡 😐 😐 😐 😐 😐

↺ ↻ ↻ ↻ ↻ ↻

< VORHERIGE NÄCHSTE >

Interaktion mit Lernmaterialien (Skript)

1.1 Recap: Complexity Analysis in AI?



Revise materials before progressing.

In public discussion, this development is often cited as the reason why (strong) AI is inevitable. But the argument is fallacious if all the algorithms we have are of very high complexity (i.e. at least exponential in either time or space). So to induce the state of play in

Artificial Intelligence

Definition 0.1. Ein Algorithmus ist eine formale oder informelle Spezifikation einer Lösung eines Berechnungsproblems (typischerweise die Berechnung von Ausgabe Daten aus Eingabe Daten) durch Ausführung einer endlichen Folge von Anweisungen eines (konkreten oder gedachten/abstrakten) informationsverarbeitenden Systems.

In this section

the main goal is to understand the complexity of algorithms and to see how it affects the design of algorithms.

„Kompetenz“-Checks

Competency Table

ALLE ÜBUNGSAUFGABEN ANZEIGEN ³⁷

Konzepte	History	Remember	Understand	Apply	Resources
algorithm		0.80	0.78	0.80	  ³
computer		0.76	0.78	0.80	
NP hard		0.75	0.75	0.75	  ¹
complexity theory		0.75	0.75	0.75	  ¹

Quizzes

Understand	Apply	Resources
0.78	0.80	
0.78	0.80	
0.75	0.75	
0.75	0.75	

Practice Problems

Aufgabe 1 von 3 (Algorithmen und Programme)

< VORHERIGE NÄCHSTE >

Was ist der Unterschied zwischen einem *Algorithmus* und einem *Programm*?

☐ Fangfrage. Es gibt keinen Unterschied.

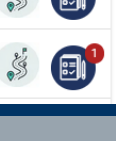
☐ In manchen Programmiersprachen heißt es Algorithmus, in manchen Programm.

☐ Programme sind generelle Problembeschreibungen (für Menschen), Algorithmen sind spezifische Instanzen (in Computern).

☐ Algorithmen sind generelle Problembeschreibungen (für Menschen), Programme sind spezifische Instanzen (in Computern).

SUBMIT

Quizzes

Understand	Apply	Resources
0.78	0.80	
0.78	0.80	
0.75	0.75	
0.75	0.75	

Practice Problems

Aufgabe 1 von 3 (Algorithmen und Programme)

[< VORHERIGE](#)[NÄCHSTE >](#)

Was ist der Unterschied zwischen einem *Algorithmus* und einem *Programm*?

☐ Fangfrage. Es gibt keinen Unterschied.

☒ In manchen Programmiersprachen heißt es Algorithmus, in manchen Programm.

☒ Programme sind generelle Problembeschreibungen (für Menschen), Algorithmen sind spezifische Instanzen (in Computern).

☐ Algorithmen sind generelle Problembeschreibungen (für Menschen), Programme sind spezifische Instanzen (in Computern).

SUBMIT

Quizzes

Understand	Apply	Resources
0.78	0.80	
0.78	0.80	
0.75	0.75	
0.75	0.75	

Practice Problems

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NÄCHSTE >



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Guided Tours

Understand	Apply	Resources
0.78	0.80	
0.78	0.80	
0.75	0.75	
0.75	0.75	



×

Guided Tour

cbrackchar

minuschar

slashchar

obrackchar

ninechar

starchar

Zchar

achar

Achar

zerochar

dotchar

zchar

pluschar

commachar

root

summand

partial function space

partial function space

assign

solve

input

worst-case

Needs:

bsetst

Definition 0.1. Wir nennen die Menge $A \rightarrow B$ aller Funktionen von A nach B den **Raum der Funktionen** von A nach B . $A \rightarrow B$ wird auch als B^A geschrieben.
Analog ist $A \rightarrow B$ der **Raum der partiellen Funktionen** von A nach B .

symbol

symbol

information

information processing system

computation

terminat

▷ **Definition 0.1.** A **symbol** is a pair $d ? n$ consisting of a **name** n and a **reference** d to a **definition** that has n as a **definiendum**.

definiens

definiens

eqdef

worst-case

Needs:

definitional equation

Definition 0.1. The simplest form of definition schema is the **simple definition**. This just introduces a name (the **definiendum**) for a compound object (the **definiens**). Note that the name must be new, i.e. may not have been used for anything else, in particular, the definiendum may not occur in the definiens. We use the symbols $:=$ (and the inverse $\Rightarrow$) to denote simple definitions in formulae.

cbrackchar

Suche



Strong vs. Weak AI

Part I

Strong vs. Weak AI

A Video Nugget covering this part can be found at <https://fau.tv/clip/id/21724> .

Strong vs. Weak AI

To get this out of the way before we begin We now come to a distinction that is often muddled in popular discussions about “Artificial Intelligence”, but should be cristal clear to [students](#) of the [course](#) AI-1 — after all, you are upcoming “AI-specialists”.

Strong AI vs. Narrow AI

Kommentare & Notizen

Strong vs. Weak AI

To get this out of the way before we begin We now come to a distinction that is often muddled in popular discussions about “Artificial Intelligence”, but should be cristal clear to **students** of the **course** AI-1 — after all, you are upcoming “AI-specialists”.

Strong AI vs. Narrow AI



- ▶ **Definition 0.1.** With the term narrow AI (also weak AI, instrumental AI, applied AI) we refer to the use of software to study or accomplish *specific* problem solving or reasoning tasks

(e.g. playing chess/go, controlling elevators, composing music, ...)

- ▶ **Definition 0.1.** With the term **strong AI** (also **full AI**, **AGI**) we denote the quest for software performing at the full range of human cognitive abilities.

Kommentare & Notizen

The screenshot shows a web interface with a modal window open. The modal has two tabs: 'MEINE NOTIZEN' (selected) and 'KOMMENTARE'. Under 'MEINE NOTIZEN', it says '0 notes' with a refresh icon. Below this is a text input field with a blue icon on the left and a placeholder text 'Erstellen Sie hier eine private Notiz...'. A 'SPEICHERN' button is at the bottom right of the input area, and a 'CLOSE' button is at the bottom right of the modal. The background shows a document with text about AI, including 'Strong vs. Weak AI', 'Definition 0', and 'software performing at the full range of human cognitive abilities'.

Strong vs. Weak AI

To get this out of the popular discussion in the course AI-1 —

Strong AI

▷ Definition 0 (AI) we refer to or reasoning

▷ Definition 0 software performing at the full range of human cognitive abilities.

that is often muddled and not clear to students of

Experimental AI, applied to specific problem solving

composing music, ...)

denote the quest for

Forum & Karma

Artificial Intelligence I

Feel free to ask questions here or connect with your instructors and classmates [on Matrix](#).

+ STELLEN SIE EINE FRAGE

☐ Bemerkungen anzeigen ☐ Nur unbeantwortete anzeigen

? In the question "Problems requiring are called:" the answer should be multi-select (not single cho...
[REDACTED] vor einem Tag

? If a query is a list of terms and by Definition 1.1.3 a term can be a constant then "?-apple." should...
[REDACTED] vor einem Tag

? Review question should be of multi-choice (Problems requiring strong AI)
[REDACTED] vor einem Tag

? Prof. Can you explain all three formulas in simple terms?
[REDACTED] vor 2 Tagen

? Dear Prof. First resource link on tutorial by Fisher is not working anymore. Maybe you want to up...
[REDACTED] vor 2 Tagen

Forum & Karma



VERLINKTE INHALTE ANZEIGEN 



vor 2 Tagen

ANTWORT



Prof. Can you explain all three formulas in simple terms?

Jonas Betzendahl 

vor einem Tag

ANTWORT



These are not “formulas” per se, these are what we call “inference rules”. They talk about what kind of deductions are valid in whatever system you’re talking about. Everything above the line is called “assumptions” (so what has to be true to do this bit of inference). Everything below the line is called the “conclusions” (so what new things we are learning from this bit of inference). In this case, we have the following inference rules:

(Modus Ponens): If we know A and $A \Rightarrow B$ (read: A implies B) separately, we can conclude B .

Example: If we know that it rains and we know that when it rains, the ground is wet, then we can conclude that the ground is wet.

Study Buddy

Füllen Sie das folgende Formular aus, um Partner zum gemeinsamen Lernen zu finden.

Name	Felix Grelka
E-Mail (z. B. you@fau.de) *	felix.grelka@fau.de ⓘ
Stellen Sie sich vor	Hi, ich suche Mitstudierende die sich in einer kleinen Gruppe zum intensiven lernen vernetzen wollen!
Studiengang (z. B. Master in Informatik)	Promotion Informatik
Semester #	1
Bevorzugter Treffpunkt	Virtual
Bevorzugte Tage für ein Treffen	Fri, Tue
Sprachen, die Sie sprechen	Deutsch, English
☒ Ich verstehe, dass diese Informationen verwendet werden, um andere Nutzende von Study Buddy Connect zu finden und mit ihnen in Kontakt zu treten.	
VERBINDEN	

Study Buddy

Lernende suchen nach einem Study Buddy

Diese Lernenden suchen nach einem Study Buddy. Bitte senden Sie ihnen eine Anfrage.

[Redacted]
Master's in data science, semester 1

Tag Präferenz:

Sprachen:

Treffen Präferenz:

English

Both



[Redacted]
Masters in Artificial Intelligence, semester 1

Hi everyone, I'm a new student and I have just started my master's in AI. I have previously worked at Accenture and during my undergraduate days, published journal articles and presented several research papers at International conferences, on Machine Learning. If anyone has space in their group, I'd appreciate it if you could let me know.

Tag Präferenz:

Mon, Wen, Fri, Tue, Thu

Sprachen: Deutsch, English, Bengali, Hindi

Treffen Präferenz:

Both



[Redacted]
Masters in Data Science, semester 1

Hi everyone, I'm a new student looking for a study group or partner for the "AI-1" course. If anyone has space in their group, I'd appreciate it if you could let me know.

Tag Präferenz:

Mon, Fri

Sprachen:

English, Hindi

Treffen Präferenz:

Both



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