Lehrveranstaltungen im Sommersemester 2013

Information Systems and Machine Learning Lab (ISMLL)

Prof. Dr. Dr. Lars Schmidt-Thieme

Übersicht

Vorlesungen

Seminare

Praktika

Vorlesungen

Wirtschaftsinformatik 2

Studiengang: BSc WI (Pflichtmodul)
Wann: Di 8.00 bis 10.00, ab 16.04.2013
Wo: B26
Wer: Lars Schmidt-Thieme
Übung: Fr 12.00 bis 14.00 in Raum B26 (Martin Wistuba)
Credits: 6

Business Analytics

Studiengang: MSc WI (Wahlmodul)
Wann: Di 10.00 bis 12.00, Mi 10.00 bis 12.00 (14tgl.), ab 16.04.2013
Wo: B26
Wer: Lars Schmidt-Thieme
Übung: Do 16.00 bis 18.00 in Raum B26 (Josif Grabocka)
Credits: 8

Übersicht

Vorlesungen

Seminare

Praktika

Bachelor-Seminar: Künstliche Intelligenz: Games

Studiengang: BSc WI & IMIT (Gebiet KI & ML)
Wann: Mo 10.00 bis 12.00
Wo: B26
Wer: Lars Schmidt-Thieme, Ruth Janning
Credits: 3

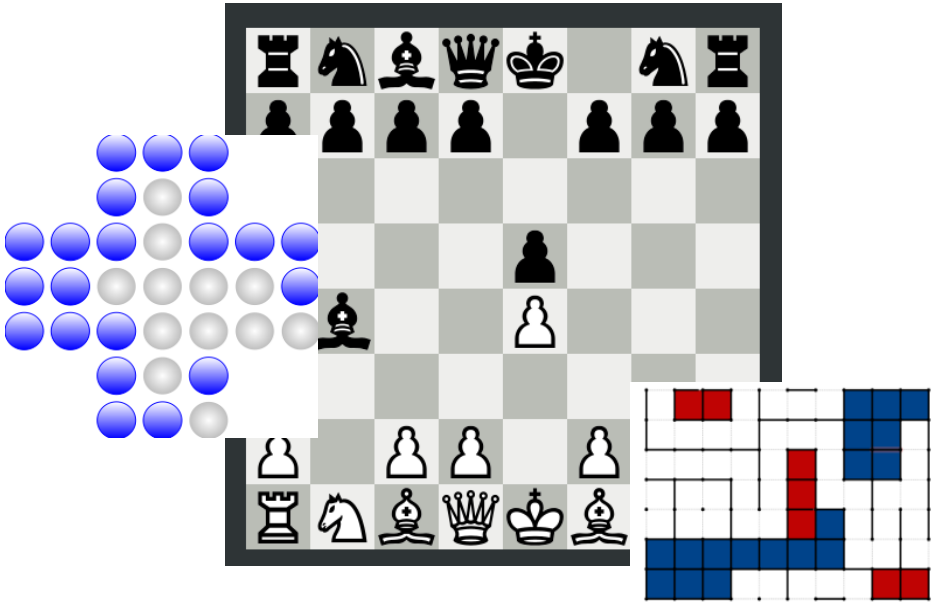
Master-Seminar: Maschinelles Lernen: Data Mining for Traffic Congestion Control, Travel Time Prediction and Collision Avoidance

Studiengang: MSc WI & IMIT (Gebiet KI & ML)
Wann: Mi. 16.00 bis 18.00
Wo: B26
Wer: Lars Schmidt-Thieme, Umer Khan
Credits: 3

Oberseminar ML und Data Mining

Studiengang: BSc / MSc WI & IMIT (Gebiet KI & ML)
Wann: Di. 18.00 bis 20.00
Credits: 3

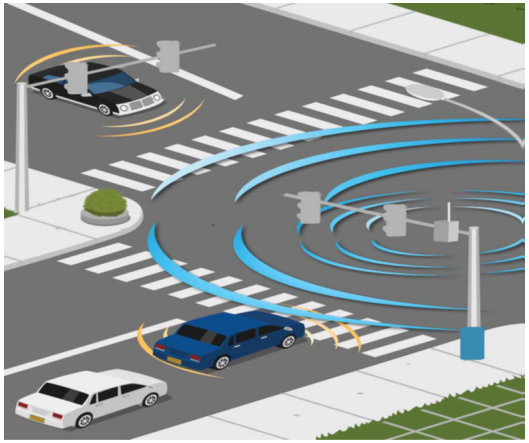
Bachelor-Seminar: Künstliche Intelligenz: Games



Topics:

- Game Artificial Intelligence
- General Game Playing
- Learning Board Game Rules
- Adversarial Search
- MiniMax und Alpha-Beta Search
- Dots-And-Boxes und Alpha-Beta Search
- Peg Solitaire und Breadth-First Iterative-Deepening A* Search

Data Mining for Traffic Congestion Control, Travel Time Prediction and Collision Avoidance



We see myriad traffic control devices on our roadways: closed-circuit TVs that monitor and verify traffic conditions; sensors that collect traffic volume and speed data, and detect the presence of vehicles; dynamic message signs that display traffic information; and more. These Intelligent Transportation Systems (ITS) devices collect and transmit significant traffic information data. This enormous data has motivated a large number of ITS applications ranging from traffic management to avoid congestion, minimization of travel time, reduction of fuel consumption, accurate trip routing, online driver assistance and autonomous navigation. Interestingly, machine learning and data mining can help in solving most of these problems.

Data Mining for Traffic Congestion Control, Travel Time Prediction and Collision Avoidance

Throughout this seminar students will have an opportunity to get deeper insight on recent machine learning methodologies to solve the following problems:

1) Traffic Congestion Control: A significant problem that results from increased traffic volume on roadways is congestion. Traffic congestion contributes to increased shipping costs, losses in productivity, wasted fuel, increased pollution, and vehicle crashes. Machine learning methodologies can used to predict traffic dynamics to avoid future congestion scenarios.

Data Mining for Traffic Congestion Control, Travel Time Prediction and Collision Avoidance

2)Travel Time Prediction: Travel time information has a significant role in various fields of intelligent transportation systems, such as advanced traffic management systems, advanced traveler information system, commercial vehicle operation and emergency management system. Accurate travel time will help the drivers and logistic operators to avoid congested area and it will cause of the reduction of the traffic congestion, travel cost and level of service. Accurate travel time prediction techniques can be investigated to solve this problem.

3) Trajectory Planning and Collision Avoidance: Estimation of the motion dynamics of surrounding vehicles in order to predict their trajectories and subsequently avoid collision accidents.

Data Mining for Traffic Congestion Control, Travel Time Prediction and Collision Avoidance

The student load in this course consists of selecting one of the proposed publications, analyzing and understanding the method(s) described, and finally presenting it on the audience of the classroom. The student shall be able to reason on various advantages/disadvantages of the method and shall be prepared to answer ?on-topic? questions by the course members and the instructor(s). In the end of the course an in-depth report is expected to be delivered, which includes not only a description of the prepared study, but also personal analysis and criticism regarding the method.

Übersicht

Vorlesungen

Seminare

Praktika

Praktika

Bachelor-Praktikum: Maschinelles Lernen und Künstliche Intelligenz

Intelligent Tutoring System and Artificial Speech Recognition

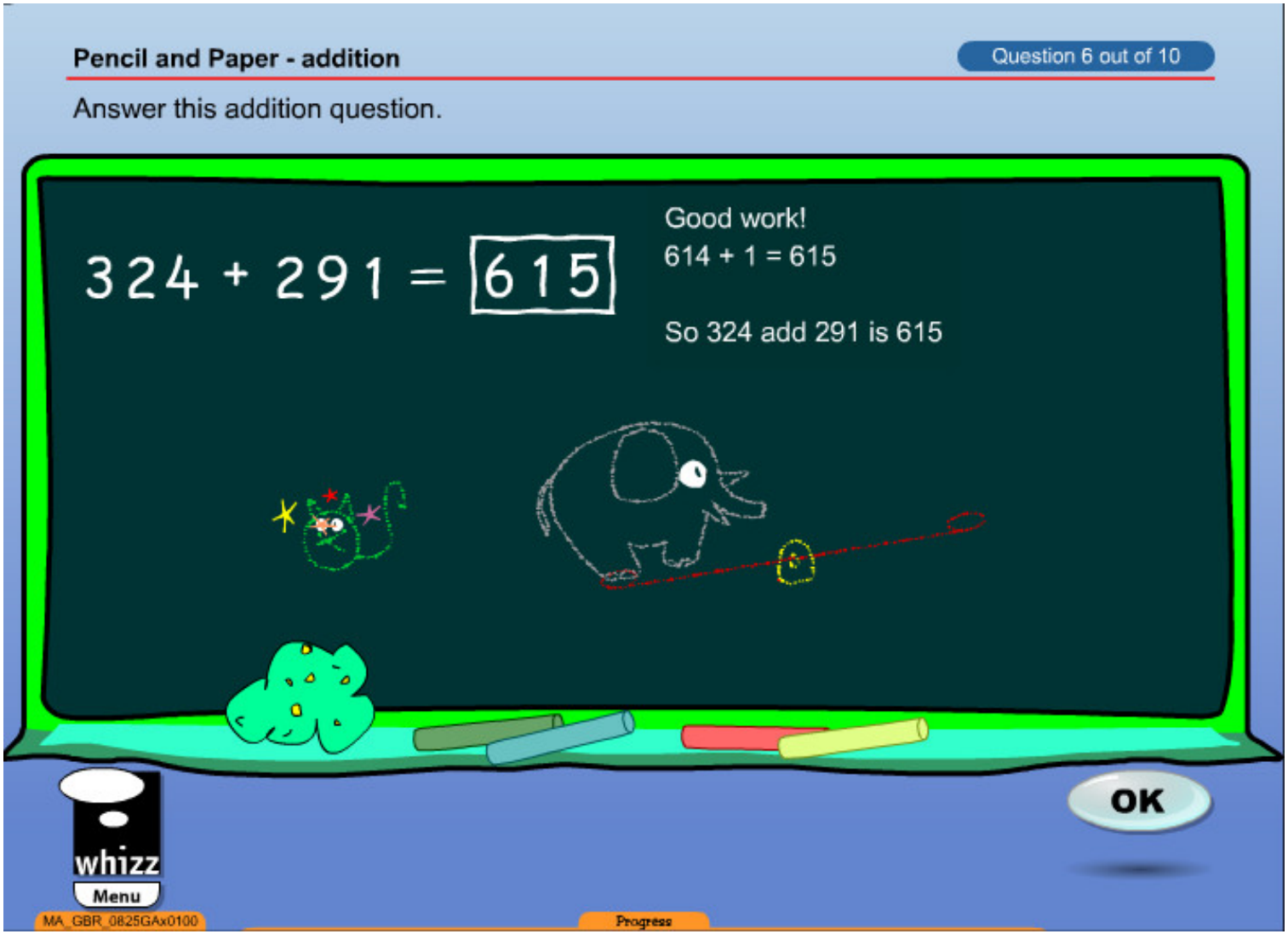
Studiengang: BSc WI & IMIT (Gebiet KI & ML)
Wann: Mo. 14.00 bis 18.00
Wo: B26
Wer: Lars Schmidt-Thieme, Carlotta Schatten
Credits: 4

Master-Praktikum: Maschinelles Lernen und Künstliche Intelligenz

Intelligent Tutoring System and Artificial Speech Recognition

Studiengang: MSc WI & IMIT (Gebiet KI & ML)
Wann: Mo. 14.00 bis 18.00
Wo: B26
Wer: Lars Schmidt-Thieme, Carlotta Schatten
Credits: 4

Intelligent Tutoring System



Artificial Speech Recognition

1. Task of the student will be to implement a program performing the common preprocessing of audio signals with the aid of already existing libraries for speech recognition (from .wav to .txt).

2. Four possible tasks are described in: http://emotion-research.net/sigs/speech-sig/is13-compare
   2.1 **Social Signals Sub–Challenge**
   2.2 **Conflict Sub–Challenge**
   2.3 **Emotion Sub–Challenge**
   2.4 **Autism Sub–Challenge**