Semantic Analysis of Learning Traces
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**LIRIS lab, TWEAK team**

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The activity of the TWEAK team relates to the fields of AI and Knowledge Engineering, exploring more specifically two dimensions: TELS and the Web.

We are particularly interested in the co-evolution of user-machine systems in computer-supported environment, with a knowledge-oriented stance.

**Expertise in the field of TEL**

- Models and tools to
  - Build profiles of learners from their traces
  - Generate activities according to pedagogical needs of each teacher
  - Adapt content of TEL for each learner
  - Acquire teachers’ knowledge

**Keywords**: interaction traces, traces models, traces visualization, indicators, teachers, analysts

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**kTBS: a kernel for Trace-Based Systems**

The TWEAK team defines *Trace-Based Systems* as systems that tap the knowledge available in users' interaction traces.

kTBS is an open reference implementation of TBS based on RDF.

- A trace is a set of *obsels* (observed elements).
- An obsel has:
  - a type
  - 2 timestamps (begin and end)
  - attributes, and relations to other obsels
- A trace is linked to a *trace model* that describes:
  - the obsel types that the trace can contain
  - their attributes and their relations
- A trace can be computed by a *transformation method* in order to create other traces.

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**kTBS4LA: kTBS for Learning Analytics**

**Objective**: enable an analyst to use kTBS in order to interpret learning traces.

**Scenario**: an analyst wants to understand how learners use a TEL system $T$ and to compute indicators about learners activities or skills.

Using kTBS4LA, he/she can:

- import traces to the platform and define a trace model for $T$
- visualize the traces, each type of obsel being represented differently
- compute new traces (e.g. filter)
- define requests to compute indicators

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**A. Mille, P.-A. Champin, A. Cordier, O. Georgeon & M. Lefevre. Trace-Based Reasoning - Modeling interaction traces for reasoning on experiences. FLAIRS 2013, USA, pp. 1-15.**