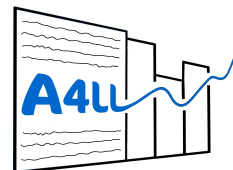




UNIVERSITÉ
RENNES 2

LIBILE

Analytics for Language Learning



Interfacing MOODLE with A4LL via LTI

T. Gaillat, C. Mallart, N. Ballier, A. Simpkin, R. Venant, A. Faugère, B. Stearns, P. Lisson, J. Yu Li, P. Lissón

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Problem statement

Second Language (L2) teaching: intuitive analysis of student's writings based on manual annotation of the errors ⇒

- underestimates other dimensions of language quality
- hinders inter-subject comparability
- time-consuming task that delays feedback to students

Objective: Create a language-learning analytics system for teachers to monitor their groups

Research Questions

Three main research questions to uncover some of the features of Interlanguage

1. what are the **language features** related to specific **proficiency** levels?
2. how can these features be measured **automatically**?
3. how can measures be converted into **meaningful analytics** for descriptive feedback and teaching decisions?

Our approach

1. Richly annotated L2 data (Rennes students)
2. Identifying and designing automatic measures in L2 writings
3. Modeling L2 writing & proficiency
4. Defining visualisations
5. **Creating and interoperable data pipeline**

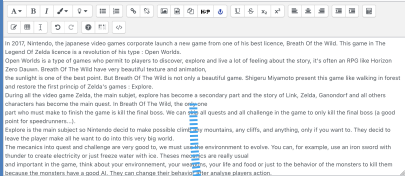
System overview



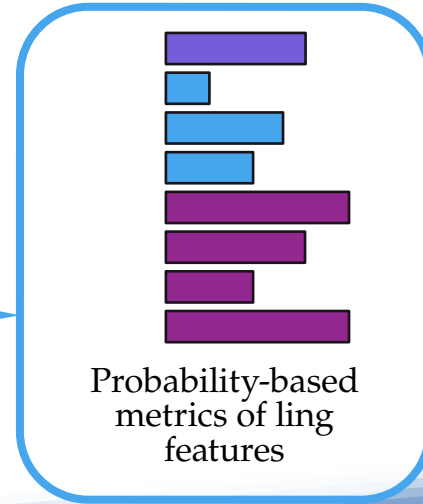
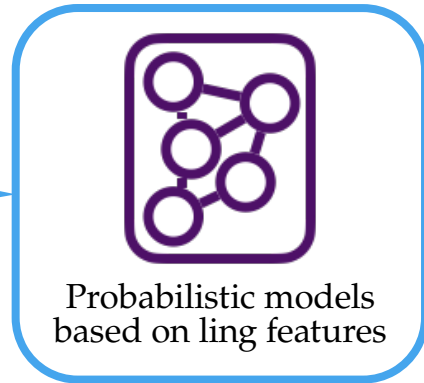
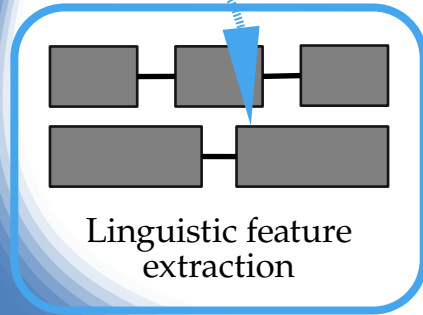
Mediated
interactions
Class + Moodle



- Predictions
- Explanations
- Enriched texts

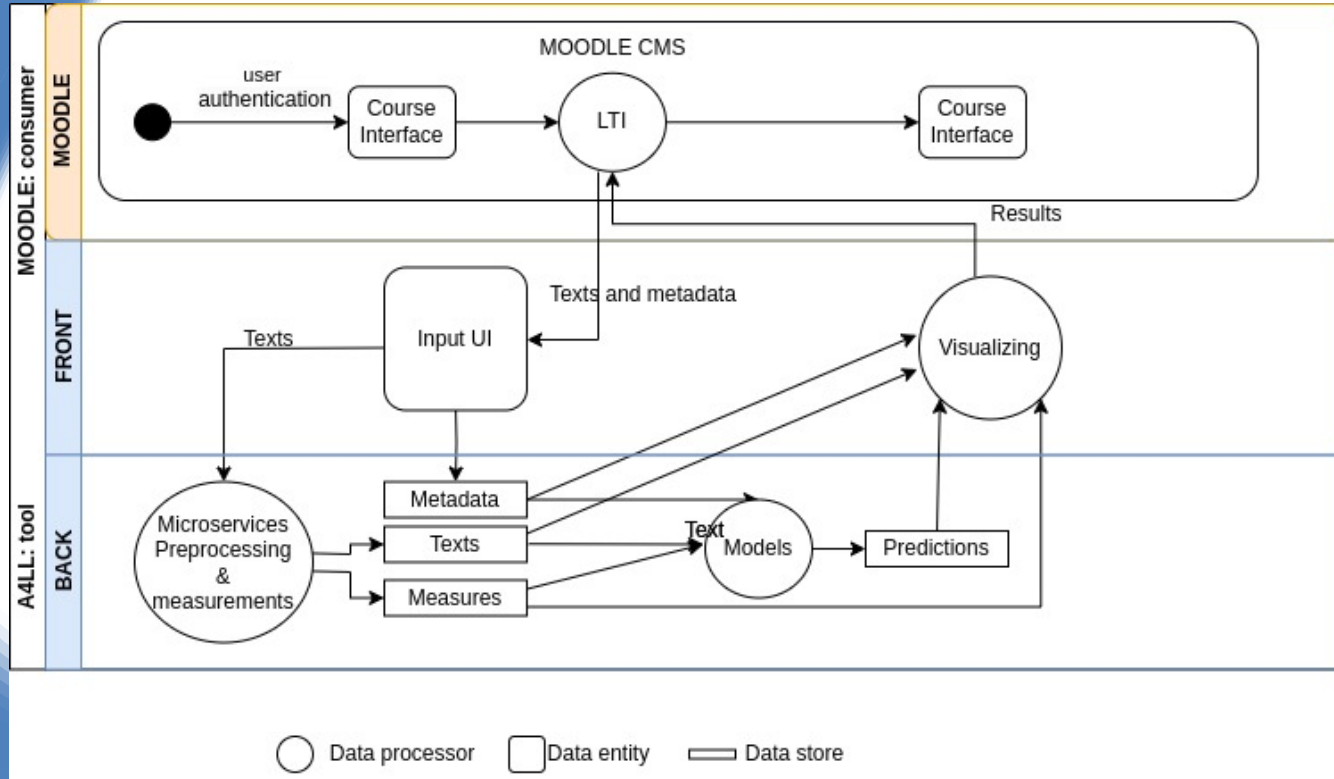


- Text flow
- Final production



Symbolic knowledge

Data Flow Diagram



Integrating into MOODLE

Admin:

- LTI tool installed in MOODLE
- Integrate A4LL as an external LTI resource

External tool configuration

Expand all

Tool settings

Tool name * ⓘ A4LL

Tool URL * ⓘ HTTPS://URL.....

Tool description ⓘ

Consumer key ⓘ provided by A4LL

Shared secret ⓘ 🔍

Custom parameters ⓘ

Tool configuration usage ⓘ

Default launch container ⓘ

Show more...

Embed

Embed, without blocks

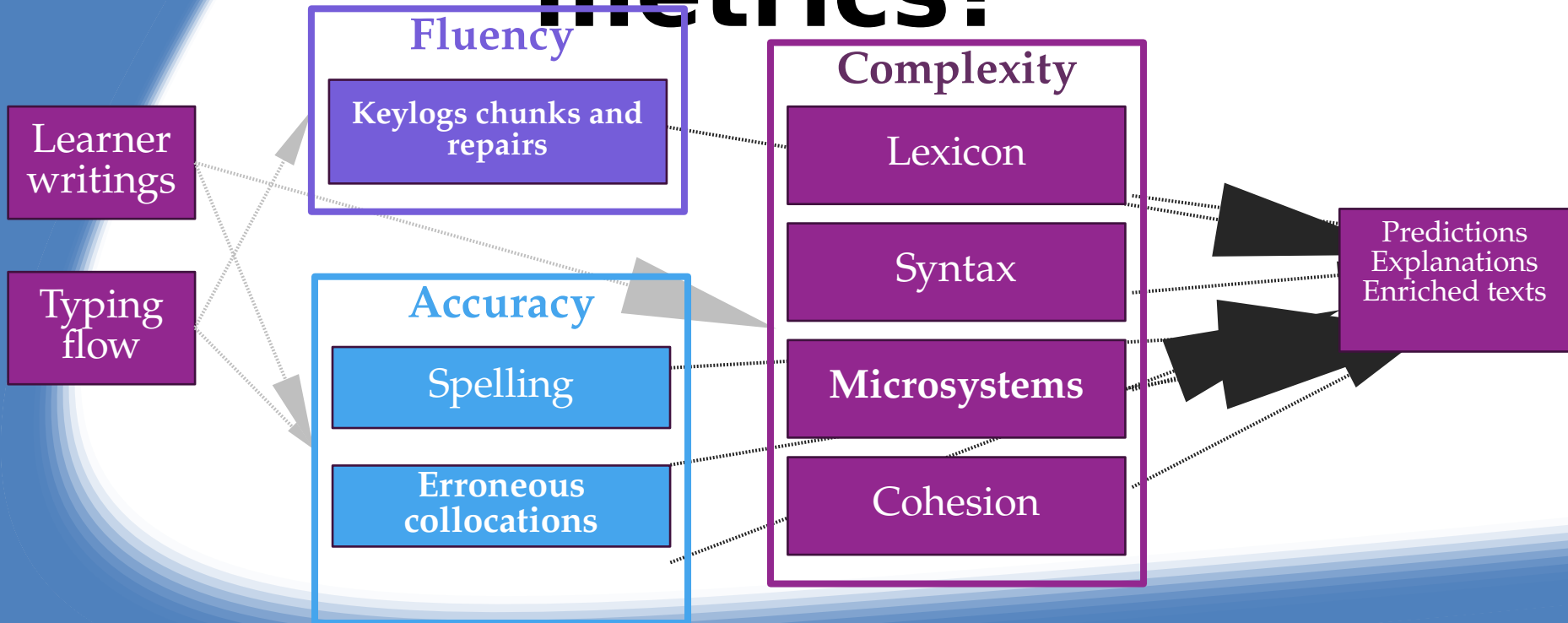
Existing window

✓ New window

Moodle activity

- Teacher adds LTI External resource as an activity
- Activity is embedded
- Students are automatically authenticated into A4LL

Which linguistic metrics?



Metric processing microservices

Microsystem tool - in dev

Lexical profiling - in dev

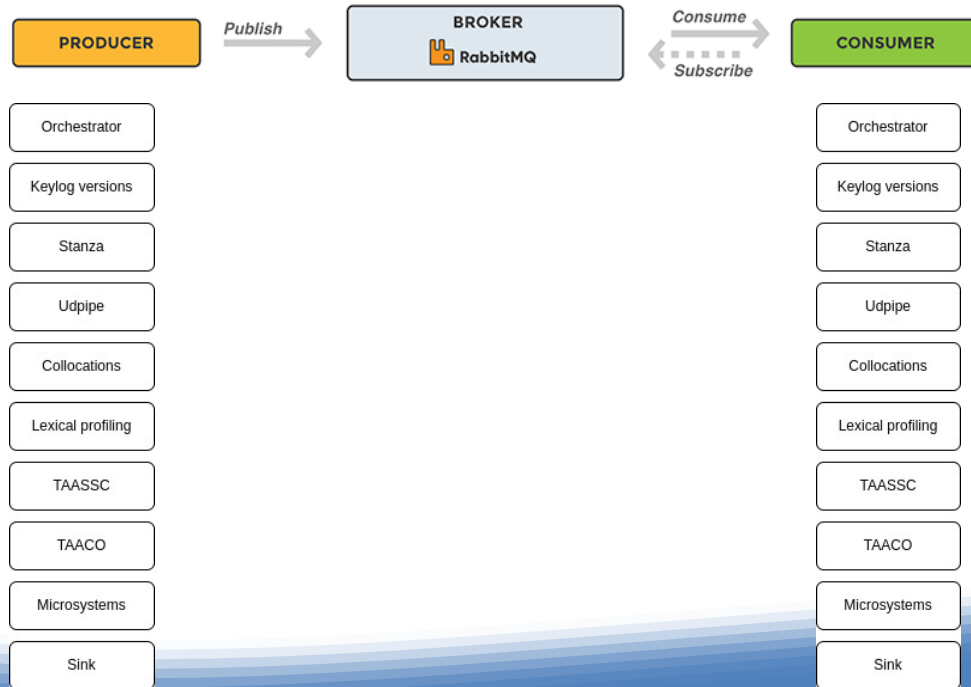
Collocation identification tool - in dev

Keylogging behaviour - in dev

Syntactic complexity tool with TAASSC (Kyle, 2016)

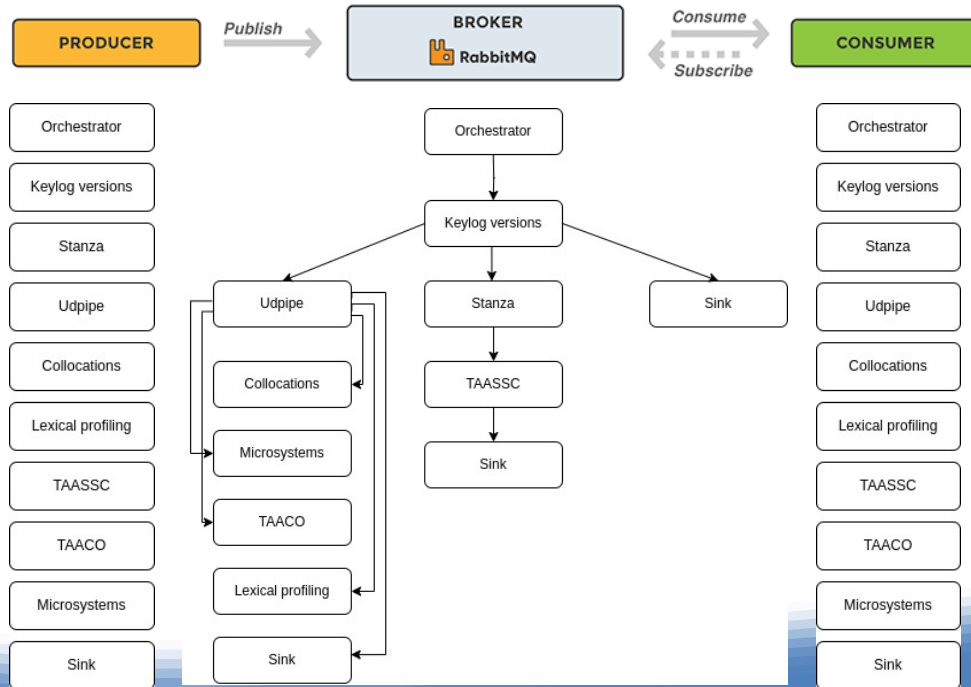
Cohesion tool with TAACO (Kyle et al., 2018)

Message queuing



Source: www.cloudamqp.com

Message queuing



Source: www.cloudamqp.com

Linguistic pre-processing tools

- UDPipe (Straka et al., 2016)
 - Universal Dependency annotation (de Marneffe et al., 2021)
- Stanford Stanza (Qi et al., 2020)

Example: UDPipe microservice

1 Clean-up

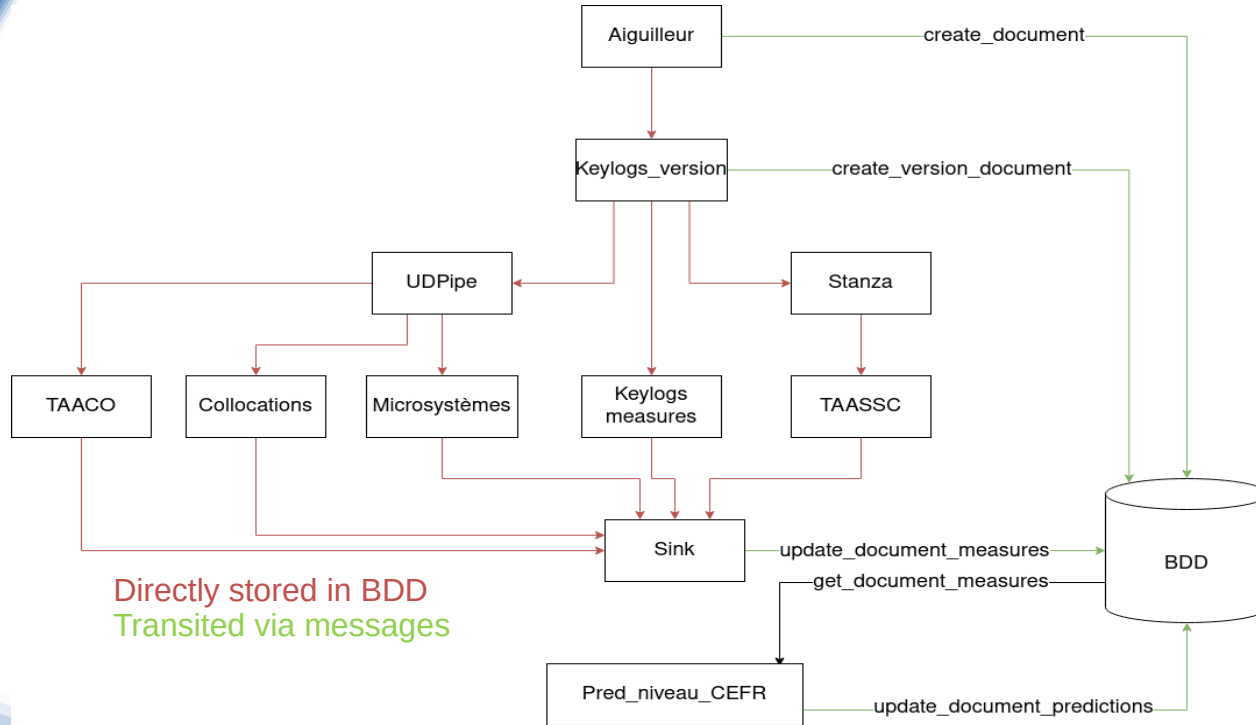
2 Annotation: create_data frames of UD sentences :

- Input: texts
- Output: full CONLL-U annotated file

CONLL-U format

ID	token	lemma	UPOS	XPOS	Morphological features	Head index	Dependency relation with target	Morphological feats of head
1	This	this	PRON	DT	Number=Sing PronType=Dem	2	nsubj	Discourse=organization- preparation:110->112:0 Entity=(129-abstract- giv:act-cf1*-1-coref)
2	leads	lead	VERB	VBZ	Mood=Ind Number=Sing Person=3 Tense=Pres VerbForm=Fin	0	root	—
5	question	question	NOUN	NN	Number=Sing	2	obl	—

Architecture in dev



Expected outcomes

- A MOODLE module for L2 Analytics with actionable visualizations in MOODLE
- Independent microservices for task-specific linguistic processing

Deliverables

sites-recherche.univ-rennes2.fr/lidile/en/a4ll/

CELVA.Sp L2 corpus > Nakala

MOODLE corpus collection module > Gitlab

DMP > Opidor

Python programs > Gitlab

References

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Merci

- More info on:
- sites-recherche.univ-rennes2.fr/lidile/en/a4ll/