

Analogies: from Theory to Applications (ATA)

ICCBR 2022 Workshop

M. Couceiro, E. Marquer, P. Monnin, P.-A. Murena

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Organizers



Miguel Couceiro

miguel.couceiro@loria.fr



Esteban Marquer

esteban.marquer@loria.fr



Pierre Monnin

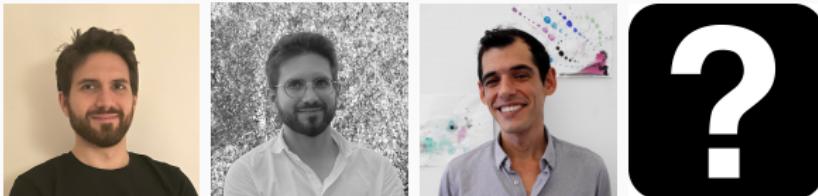
pierre.monnin@orange.com



Pierre-Alexandre Murena

pierre-alexandre.murena@aalto.fi

Analogies & analogical reasoning (AR)



Two key cognitive processes: Inference and Creativity

Detecting/mining analogies: Given a, b, c , and d ,

- is (a, b, c, d) a valid analogy?

Solving analogies: Given a, b, c

- find x s.t. (a, b, c, x) a valid analogy

Reasoning and integrating analogical reasoning:

- Depending on the concrete application and ML&AI task

Different views on AR and ATA goals

Axiomatic: As 4-ary relations satisfying certain postulates

Examples: reflexivity, (certain) permutations, etc.

Relational: $R(a, b, c, d) \equiv P(P_1(a, b), P_1(c, d))$, for P, P_1 predicates

Example: $R(\text{wine}, \text{France}, \text{beer}, \text{Germany})$

Functional: $R(a, b, c, d)$ if $b = T(a)$ and $d = T(c)$, for some T

Example: $R(\text{go}, \text{went}, \text{make}, \text{made})$

Model Theoretic: Relying on structural transformations and “rewriting”

Examples: *Structure mapping theory* and *Justifications*

Goals: ATA seeks to explore both **foundational and applicative** aspects of AR in ML & AI, NLP & NLU, KDD & KRR, **and** real-world applicat.s, **as well as** bridge gaps with other reasoning frameworks.

Program: Morning sessions

9h00-9h15: Welcome and opening presentation

9h15-10h15: Plenary Talk by **Stergos Afantinos** (Chair: M. Couceiro)

Analogies: a brief attempt at understanding what they are and an even briefer one at detecting analogies between pairs of sentences.

Contributed talks (Chair: P.-A. Murena)

10h15-10h40: Interactions between KG and AR (P. Monnin)

10h40-11h00: Break

11h00-11h25: Sentence Analogies for text Morphing (Z. Pan?)

11h30-11h55: Transferring learned models ... (E. Marquer)

12h00-12h25: Extraction of Analogies between sentences (Y. Zhou)

12h30-12h55: CoAT-APC (F. Badra)

Program: Afternoon sessions

14h30-15h30: Plenary Talk by **Claire Gardent** (Chair: E. Marquer)
TBA

Contributed talks (Chair: P. Monnin)

15h30-15h55: Analogy based framework for patient-stay... (S. Alsaidi)

16h00-16h25: Efficient scoring of student analogies in STEM
(T. Wijesiriwardene)

16h30-17h00: Break

17h00-18h00: Plenary Talk by **David Raggett** (Chair: P. Monnin)
The application of qualitative metadata to analogical reasoning

18h00-18h30: Closing discussion

*We hope for a productive and enjoyable ATA...
...and let us stay in contact!*

News: Elsevier issue in *Annals of Mathematics and Artificial Intelligence*

Please: send us your slides to add to our page

URL: <https://iccbra-ata2022.loria.fr/>

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