Distributed Knowledge Graphs in Luxembourg

Located in the centre of Europe, we are well-positioned to host meetings. We have world-leading expertise in AI for Knowledge Representation, and Security & Privacy in the computer science department, relevant to COST Action CA19134.

Details of Luxembourg MC representative: Ross Horne

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Bio: PhD (Southampton, 2012) on programming languages for Linked Data. Moved to Cybersecurity in NTU Singapore and Luxembourg. Discovered vulnerabilities in ePassports affecting billions of people. Specialist in logic.

Relevant topics and researchers in Luxembourg

Langauges	Develop a *high-level language* for **consuming** distributed knowledge graphs, with features for simplifying tasks, such as a type system. (Ross Horne)
Privacy	Unfortunately, it is always possible to reidentify people after anonymising social knowledge graphs (e.g., SoLiD). However, we should still identify which *privacy* techniques to apply to minimise privacy leakage when **producing** social knowledge graphs. University of Luxembourg specialises in security and privacy. (Sjouke Mauw, Yunior Ramírez, Xihui Chen, Ross Horne)
Inconsistency	We should *embrace inconsistencies* between different knowledge graphs and use AI (logic and machine learning combined) to suggest resolutions for refining knowledge to find a common viewpoint when there are inevitable inconsistencies when distributed sources are **consumed**. We have world-leading specialists in logical methods for multi-agent systems, from which inspiration can be drawn. (Dov Gabbay, Leon van der Torre, Wojtek Jamroga, Ross Horne)
New Space	New Space, i.e., the trend towards startups engaging in space missions, is a national priority. The Copernicus Programme is a 6.7 billion EUR petabyte-scale open repository of *multi-spectral satellite data* for simulating innovation in the New Space sector. Why not extract and **produce** knowledge graphs from this huge open dataset? (Andrzej Mizera, Ross Horne)
Provenance	Build provenance into knowledge graph databases and use provenance for controlling the behaviour of agents, e.g., making use of provenance as policies for access and quality control for **consumers**. (Wojtec Jamroga, Ross Horne)
Security	In cybersecurity, we produce and consume graphs (c.f. attack trees) which describe the relationships between actions and goals of *attackers and defenders* and their attack surface. Describing attacks as knowledge graphs may facilitate cyber threat intelligence. (Sjouke Mauw, Ross Horne)
Natural sciences	Luxembourg has another industry-focussed research institute LIST (Luxembourg Institute of Science and Technology) with specialists in knowledge graph applications, e.g., for *medical data*. They may put forward a second Luxembourg MC. (Cédric Pruski, Marcos Da Silveira)
Consultancy	The Luxembourg-based firm Infeurope (est. 1983), who offer Linked Data and Semantic Web consultancy services, may be invited to engage strategically in appropriate outreach meetings.