MUCKE

Multimedia and User Credibility Knowledge Extraction

http://ifs.tuwien.ac.at/~mucke/

Mihai Lupu[1], Alexandru Ginsca[2]

[1] Vienna University of Technology

[2] CEA LIST

lupu@ifs.tuwien.ac.at

Team

- Bilkent University, Turkey
- “Al. I. Cuza” University, Iasi, Romania
- Vienna University of Technology, Austria
- Center for Alternative and Atomic Energy, France (CEA LIST)

Tean

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- Mihai Lupu (bureaucrat, administrator) (Created on November 12, 2012 at 10:05)
- Hanbury (bureaucrat, administrator) (Created on November 12, 2012 at 11:00)
- Adrian Iftene (bureaucrat, administrator) (Created on November 16, 2012 at 10:57)
- Adrian Popescu (bureaucrat, administrator) (Created on November 16, 2012 at 10:57)
- Pinar Duygulu (bureaucrat, administrator) (Created on November 16, 2012 at 10:58)
- ~~MUCKEguest1 (Created on April 8, 2013 at 08:07)~~
- ~~Ralf Bierig (bureaucrat, administrator) (Created on April~~ 8, 2013 at 08:36)
- Lenuta.Alboaie (Created on April 11, 2013 at 10:18)
- ~~Mihaela.Breaban (Created on April 11, 2013 at 10:20)~~
- ~~Diana.Trandabat (Created on April 11, 2013 at 10:20)~~
- ~~Cristina.Serban (Created on April 11, 2013 at 10:20)~~
- ~~Claudia.Gheorghiu (Created on April 11, 2013 at 10:20)~~
- Alexandra.Siriteanu (Created on April 11, 2013 at 10:20)
- Alexandru.Ginsca (Created on April 11, 2013 at 10:20)
- ~~Hichem.Bannour (Created on April 11, 2013 at 10:20)~~
- ~~Eren.Gölge (Created on April 11, 2013 at 10:20)~~
- ~~Anil.Armagan (Created on April 11, 2013 at 10:20)~~
- ~~Ahmet.Iscen (Created on April 11, 2013 at 10:20)~~
- ~~Ilker.Sarac (Created on April 11, 2013 at 10:20)~~
- ~~Test.user (Created on April 11, 2013 at 10:21)~~
- Mircea.petic (Created on October 3, 2013 at 08:08)
- Andrei Panu (Created on January 29, 2014 at 08:29)
- ~~Kkontoketsios (Created on February 6, 2014 at 16:18)~~
- Phong Vo (Created on April 25, 2014 at 13:35)
- Phong (bureaucrat, administrator) (Created on August 2, 2014 at 10:44)
- Joao Palotti (Created on August 5, 2014 at 15:19)
- Navid Rekabsaz (Created on August 5, 2014 at 15:20)
- Ozge Yalcinkaya (Created on August 6, 2014 at 08:15)
- Ionut Pistol (Created on January 13, 2015 at 09:26)
- Andrei Scutelnicu (Created on January 13, 2015 at 09:26)

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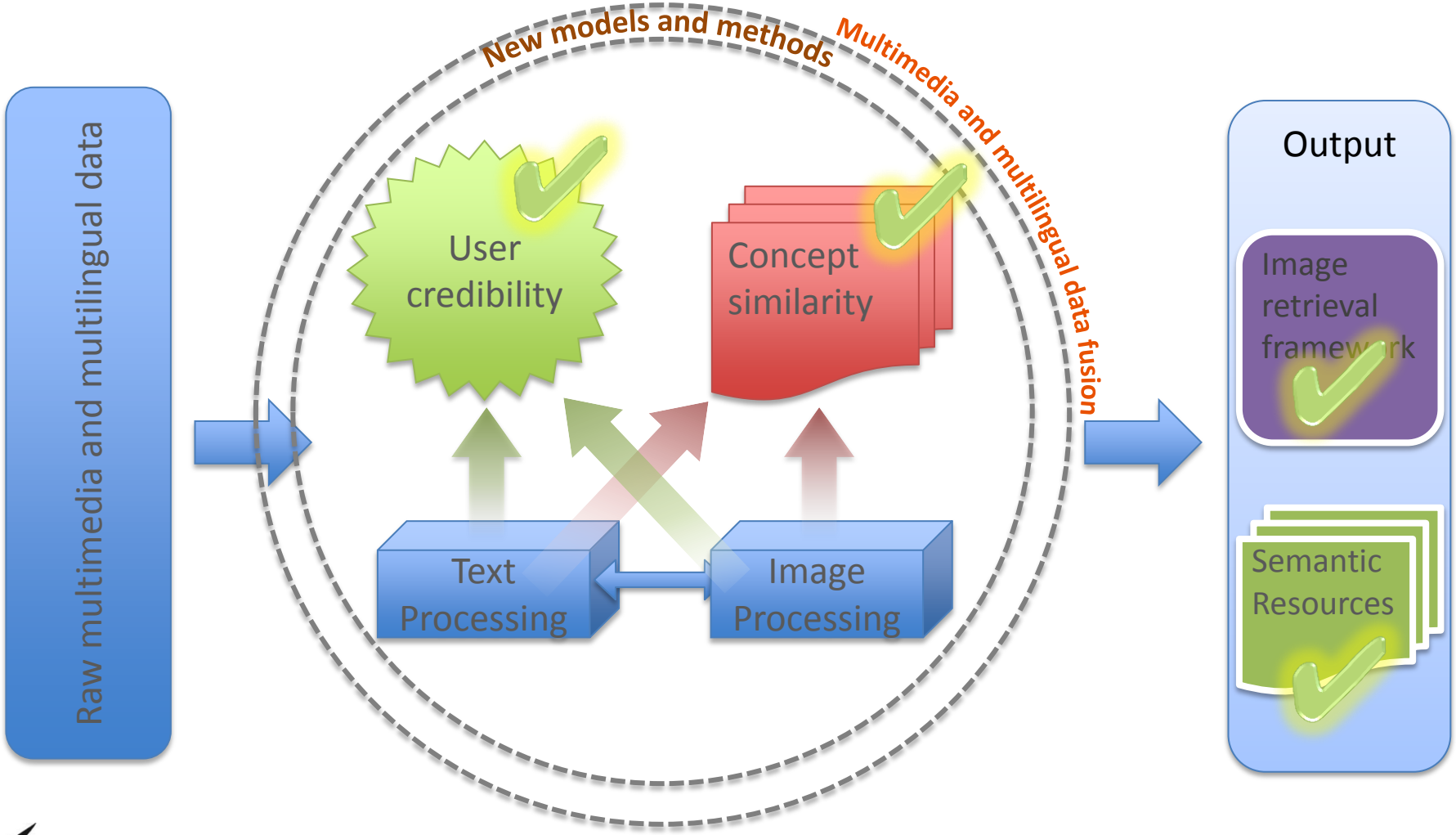
Project status

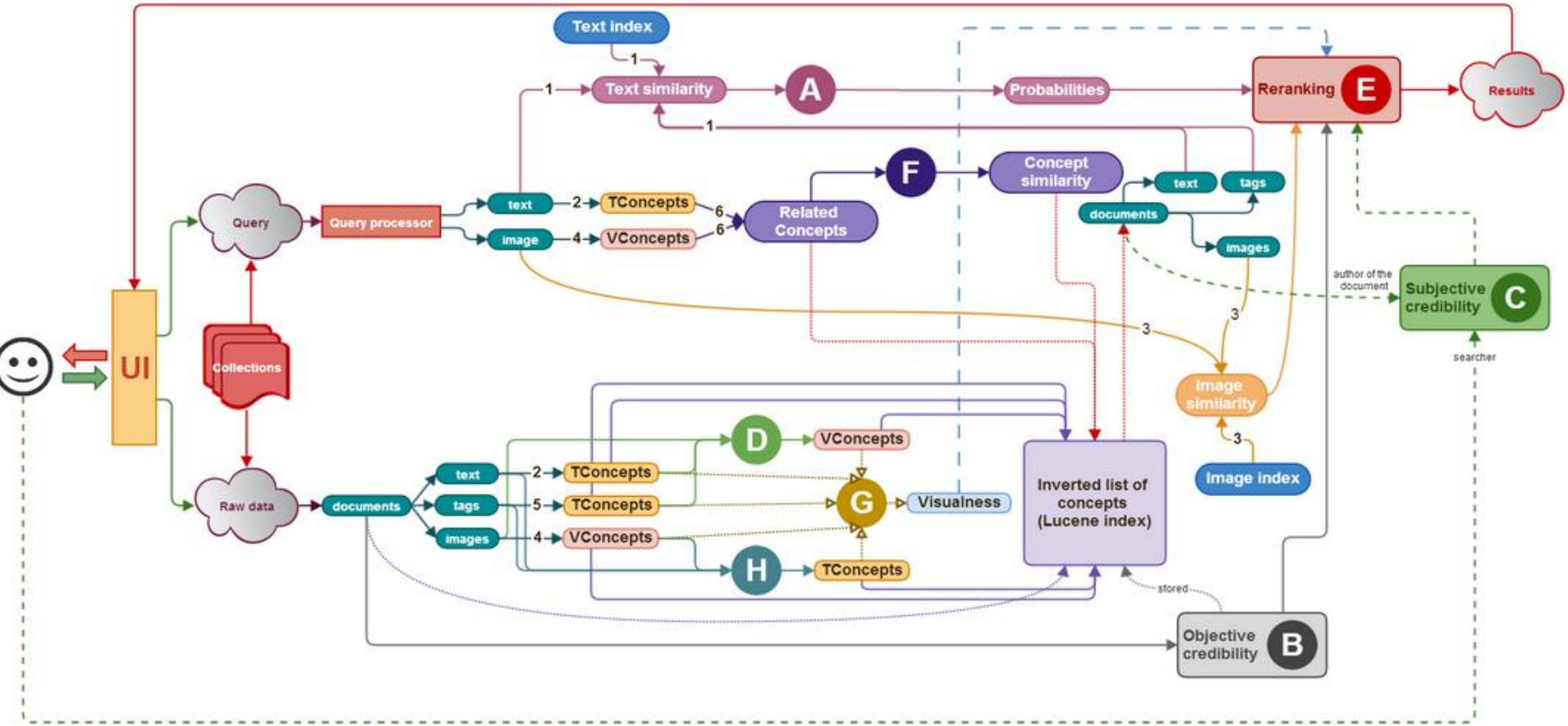
Start date: Oct 1st, 2012

	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36	Total
WP 1 - Data Collection	2.8	2.8	2.8	2.8	2.8	2.8	1.8	1.8	1.8	1.8	1.8	1.8																									**28**
T1.1 Assessment and Collection of Existing Resources	1.0	1.0	1.0	1.0	1.0	1.0																															
T1.2 New Data Collection	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8																									
WP 2 - Multimedia Processing and Fusion		2.8	2.8	2.8	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	1.4	1.4	1.4																
T2.1 Text processing		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2																			
T2.2 Image processing		1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6																			27
T2.3 Multimedia fusion					1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4																23
WP 3 - User Credibility for Multimedia Streams						1.4	1.4	1.4	1.4	1.4	3.6	3.6	3.6	3.6	3.6	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2													**45**
T3.1 Credibility Model Definition						1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4																						14
T3.2 User Context Mining											1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0													14
T3.3 User content mining and fusion											1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2													17
WP 4 - Multimedia Concept Similarity Models													2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	**60**
T4.1 Textual Concept Similarity													1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	28
T4.2 Multimedia Concept Similarity													1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	32
WP5 - User-Centred Image Retrieval																								2.7	2.7	2.7	5.4	5.4	5.4	5.4	4.1	4.1	4.1	2.7	2.7	2.7	**50**
T5.1 - Image Search Results Diversification																								1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4				14
T5.2 - User-Centred Image Retrieval Model																								1.3	1.3	1.3	1.3	1.3	1.3	1.3							9
T5.3 - Retrieval Prototype Integration																											2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	27
WP6 - Evaluation and Resource Sharing						0.8	2.3	2.3	2.3	0.8	0.8	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.8	0.8	0.8	1.3	1.3	1.3	2.8	2.8	2.8	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	**44**
T6.1 - Algorithms and Prototype Evaluation												0.5	0.5	0.5	0.5	0.5	0.5	0.5				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	11
T6.2 - Shared Task for User Credibility Estimation						0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	24
T6.3 - Resource Sharing							1.5	1.5	1.5																1.5	1.5	1.5										9
WP7 - Project Management	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	**5**
Total	3.0	5.7	5.7	5.7	7.1	9.3	9.8	9.8	9.8	8.3	10.5	11.0	11.6	11.6	11.6	10.2	10.2	10.2	7.0	7.0	7.0	6.1	6.1	8.8	8.1	8.1	10.8	9.3	9.3	9.3	8.0	8.0	8.0	6.6	6.6	6.6	**302**
																			D2.2						D3.3											D6.1
							D1.1			D6.3			D1.2			D3.1			D2.1			D2.3			D3.2			D4.2			D5.2			D5.1			D5.3
																									D4.1												D6.2

Scientific Background



MUCKE Framework



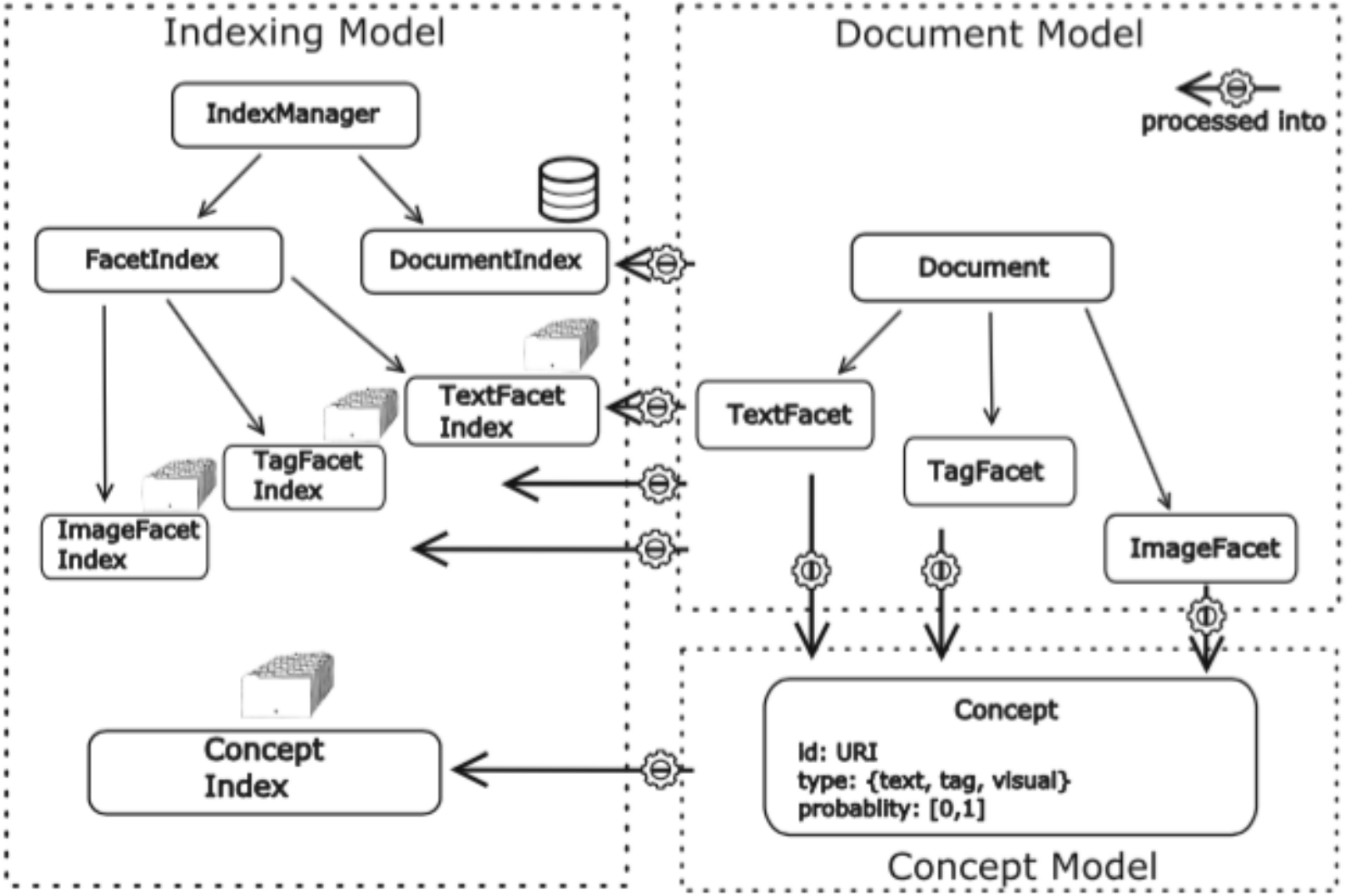
Tools at hand

1. Text -> Vectors -> Similarity
2. Text -> NLP/NER -> T-Concepts
3. Image -> Low-level features -> Similarity
4. Image -> Object Descriptions -> T-Concepts
5. Tags -> Disambiguate -> T-Concepts
6. Concepts -> Concepts[]

Wish list of components

- A Text similarity -> Probabilities
- B (producer) Data -> Credibility (Double)
- C (producer) Data, Consumer -> Credibility
- D T-Concepts, Image -> V-Concepts
- E Query -> Results -> Clusters
- F Concept, Concept -> Similarity
- G Concept -> Visualness
- H V-Concepts, Text -> T-Concepts

MUCKE Framework



Rekabsaz et. al. *Toward Optimized Multimodal Concept Indexing* in Semantic Keystone-based Search on Structured Data Sources. 2015

Workplan

	M1	M2	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36	Total
WP 1 - Data Collection	2.8	2.8																	**28**
T1.1 Assessment and Collection of Existing Resources	1.0	1.0																	6
T1.2 New Data Collection	1.8	1.8																	22
WP 2 - Multimedia Processing and Fusion		2.3	2.3																**70**
T2.1 Text processing		1.2																	20
T2.2 Image processing		1.6																	27
T2.3 Multimedia fusion			1.4																23
WP 3 - User Credibility for Multimedia Streams			2.2	2.2	2.2	2.2													**45**
T3.1 Credibility Model Definition																			14
T3.2 User Context Mining			1.0	1.0	1.0	1.0													14
T3.3 User content mining and fusion			1.2	1.2	1.2	1.2													17
WP 4 - Multimedia Concept Similarity Models			2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	**60**
T4.1 Textual Concept Similarity			1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	28
T4.2 Multimedia Concept Similarity			1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	32
WP5 - User-Centred Image Retrieval						2.7	2.7	2.7	5.4	5.4	5.4	5.4	4.1	4.1	4.1	2.7	2.7	2.7	**50**
T5.1 - Image Search Results Diversification						1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4				14
T5.2 - User-Centred Image Retrieval Model						1.3	1.3	1.3	1.3	1.3	1.3	1.3							9
T5.3 - Retrieval Prototype Integration									2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	27
WP6 - Evaluation and Resource Sharing			1.3	1.3	1.3	1.3	2.8	2.8	2.8	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	**44**
T6.1 - Algorithms and Prototype Evaluation				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	11
T6.2 - Shared Task for User Credibility Estimation			1.3	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	24
T6.3 - Resource Sharing							1.5	1.5	1.5										9
WP7 - Project Management	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	**5**
Total	3.0	5.7	7.0	6.1	6.1	8.8	8.1	8.1	10.8	9.3	9.3	9.3	8.0	8.0	8.0	6.6	6.6	6.6	**302**
							D3.3												D6.1
				D2.3			D3.2			D4.2			D5.2			D5.1			D5.3
							D4.1												D6.2

Workplan

	M1	M2	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36	Total
WP 1 - Data Collection	2.8	2.8																	**28**
T1.1 Assessment and Collection of Existing Resources	1.0	1.0																	6
T1.2 New Data Collection	1.8	1.8																	22
WP 2 - Multimedia Processing and Fusion		2.5	2.5																**70**
T2.1 Text processing		1.2																	20
T2.2 Image processing		1.6																	27
T2.3 Multimedia fusion			1.4																23
WP 3 - User Credibility for Multimedia Streams			2.2	2.2	2.2	2.2													**45**
T3.1 Credibility Model Definition																			14
T3.2 User Context Mining			1.0	1.0	1.0	1.0													14
T3.3 User content mining and fusion			1.2	1.2	1.2	1.2													17
WP 4 - Multimedia Concept Similarity Models			2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	**60**
T4.1 Textual Concept Similarity			1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	28
T4.2 Multimedia Concept Similarity			1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	32
WP5 - User-Centred Image Retrieval						2.7	2.7	2.7	5.4	5.4	5.4	5.4	4.1	4.1	4.1	2.7	2.7	2.7	**50**
T5.1 - Image Search Results Diversification						1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4				14
T5.2 - User-Centred Image Retrieval Model						1.3	1.3	1.3	1.3	1.3	1.3	1.3							9
T5.3 - Retrieval Prototype Integration									2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	27
WP6 - Evaluation and Resource Sharing			1.3	1.3	1.3	1.3	2.8	2.8	2.8	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	**44**
T6.1 - Algorithms and Prototype Evaluation				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	11
T6.2 - Shared Task for User Credibility Estimation			1.3	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	24
T6.3 - Resource Sharing							1.5	1.5	1.5										9
WP7 - Project Management	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	**5**
Total	3.0	5.7	7.0	6.1	6.1	8.8	8.1	8.1	10.8	9.3	9.3	9.3	8.0	8.0	8.0	6.6	6.6	6.6	**302**
							D3.3												D6.1
				D2.3			D3.2			D4.2			D5.2			D5.1			D5.3
							D4.1												D6.2

Current Tasks

- completed since last year
  - _MUCKE_dev_3.3 – User content mining and fusion
  - _MUCKE_dev_4.2 – Visual Concept Similarity
  - _MUCKE_dev_5.1 – Image Search Results Diversification
  - _MUCKE_dev_5.3 – Retrieval prototype integration
  - _MUCKE_dev_6.1 – Algorithms and prototype evaluation
  - _MUCKE_dev_6.2 – Shared Task for User Credibility Evaluation

Evaluation Task

- MediaEval 2014 - *Retrieving Diverse Social Images task*
  - *1 May: Development data release / 2 June: Test data release / 9 September: Run submission*
  - in addition to relevance, we provide user credibility estimations
  - additional dataset used to train the credibility descriptors (credibility set, 300 locations, 685 users, with at least 50 images per user)
  - Refined in 2015 for multiple concepts within a query
    - e.g. *Winter in Bucharest*
- MUCKE datasets
  - credibility role in image retrieval
    - topic dependent: 160 topics (90 training, 70 test)
    - per train/test topic: concept, *image*, relevance
    - where *image* has user credibility estimation/features
  - direct assessment of credibility
    - topic independent, set of 1000 users, 50 images / user
    - data: user context & content features

Dataset collection budget

- A budget of €18k was foreseen (€15k actually available after taxes)
  - Initial credibility study: 2k
  - MediaEval: 4k
  - eHealth and credibility: 2k
  - Multi-Topic Tagging Credibility Dataset (MTTCred) 7k
    - >1000 users, >50k images against 69 topics

Problems / Issues

- Delays in national financing
  - Mitigated
- Staffing problems at CEA
  - Post-doc left before the term of the contract
  - Mitigated through the implication of a PhD student
- Result
  - Project partners have agreed to extend project until end of 2015 (3 months extension)

Internal project meetings

- S0 – kickoff meeting in Vienna,
- S1 – Istanbul, 2-4 April 2013
- S2 – Iasi, 3-4 Oct 2013
- S3 – Paris, April 24-25 2014
- S4 – Istanbul, Nov 5-7 2014
- S5 – Vienna, April 3 2015
  - collocated with ECIR 2015 (two publications)
- S6 – Iasi, Nov 24-25, 2015

Communication

- Website http://ifs.tuwien.ac.at/~mucke
- Publications
  - 9 publications in the 1st year
  - 23 publications in the 2nd year
  - 23+ publications in the 3rd year
- Evaluation tasks @ MediaEval 2013, 2014, 2015

Publications since last report

1. Navid Rekabsaz, Ralf Bierig, Bogdan Ionescu, Allan Hanbury, Mihai Lupu: On the use of statistical semantics for metadata-based social image retrieval. CBMI 2015: 1-4
2. Alexandru-Lucian Gînsca, Adrian Popescu, Mihai Lupu, Adrian Iftene, Ioannis Kanellos: Evaluating User Image Tagging Credibility. CLEF 2015: 41-52
3. João R. M. Palotti, Guido Zuccon, Lorraine Goeuriot, Liadh Kelly, Allan Hanbury, Gareth J. F. Jones, Mihai Lupu, Pavel Pecina: CLEF eHealth Evaluation Lab 2015, Task 2: Retrieving Information About Medical Symptoms. CLEF (Working Notes) 2015
4. Serwah Sabetghadam, Mihai Lupu, Ralf Bierig, Andreas Rauber: Reachability Analysis of Graph Modelled Collections. ECIR 2015: 370-381
5. Bogdan Ionescu, Alexandru-Lucian Gînsca, Bogdan Boteanu, Adrian Popescu, Mihai Lupu, Henning Müller: Retrieving Diverse Social Images at MediaEval 2015: Challenge, Dataset and Evaluation. MediaEval 2015
6. Serwah Sabetghadam, João R. M. Palotti, Navid Rekabsaz, Mihai Lupu, Allan Hanbury: TUW @ MediaEval 2015 Retrieving Diverse Social Images Task. MediaEval 2015
7. Bogdan Ionescu, Adrian Popescu, Mihai Lupu, Alexandru-Lucian Gînsca, Bogdan Boteanu, Henning Müller: Div150Cred: A social image retrieval result diversification with user tagging credibility dataset. MMSys 2015: 207-212
8. Serwah Sabetghadam, Mihai Lupu, Andreas Rauber: Leveraging Metropolis-Hastings Algorithm on Graph-based Model for Multimodal IR. GSB@SIGIR 2015: 14-18
9. Alexandru-Lucian Gînsca, Adrian Popescu, Hervé Le Borgne, Nicolas Ballas, Phong Vo, Ioannis Kanellos: Large-Scale Image Mining with Flickr Groups. MMM (1) 2015: 318-334
10. Phong D. Vo, Alexandru-Lucian Gînsca, Hervé Le Borgne, Adrian Popescu: Effective training of convolutional networks using noisy Web images. CBMI 2015: 1-6
11. Eren Golge, Pinar Duygulu: FAME: Face Association through Model Evolution. CVPR Workshops 2015: 43-49
12. Mustafa Ilker Sarac, Ahmet Iscen, Eren Golge, Pinar Duygulu: ConceptFusion: A Flexible Scene Classification Framework. ECIR 2015: 55-60
13. Alexandru Calfa, Dragos Silion, Andreea Cristina Bursuc, Cornel Paul Acatrinei, Razvan Iulian Lupu, Alexandru Eduard Cozma, Cristian Padurariu, Adrian Iftene: Using Textual and Visual Processing in Scalable Concept Image Annotation Challenge. CLEF (Working Notes) 2015
14. Mihaela Elena Breaban, Adrian Iftene: Dynamic Objective Sampling in Many-objective Optimization. KES 2015: 178-187
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Financial reporting

N°	Partner	Person.months	Total costs	Percentage of requested budget
1	TUW	88.2	409269 €	100%
2	CEA LIST	82[1]	268706.81 €	88%[3]
3	Bilkent / Hacettepe University	63[2]	99332 €	81%
4	“Al. I. Cuza” University	75.25	270750.41 €	99.98%

[1] Including 5.63 PMs of post-doc financed by ANR and 16 months which are not financed by ANR: 12 PMs permanent staff and 4 PMs doctoral student.
[2] Estimated at the time of writing of this report
[3] It was impossible to buy the cluster at the beginning of the project and its amortisation during the project is thus incomplete ; The wages for non-permanent personnel were slightly lower than initially foreseen.

Thank you

MUCKE

Multimedia and User Credibility Knowledge Extraction

http://ifs.tuwien.ac.at/~mucke/