

Dr. Dominik Kowald

Post-doctoral researcher @ Know-Center GmbH



"If scientific reasoning were limited to the logical processes of arithmetic, we should not get very far in our understanding of the physical world. One might as well attempt to grasp the game of poker entirely by the use of the mathematics of probability."

(Vannevar Bush, Author of "As We May Think")

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Education

Dr.techn (Ph.D.), Graz University of Technology, Graz, **2012–2017**
Austria, *with distinction*.

Institute of Interactive Systems and Data Science (ISDS)
Dipl.Ing. (MSc.), Graz University of Technology, Graz, **2009–2012**
Austria, *with distinction*.

Institute for Information Systems and Computer Media (IICM)
BSc., Graz University of Technology, Graz, Austria. **2006–2009**
Institute for Information Systems and Computer Media (IICM)

Ing., College of Industrial Engineering,, Graz, Austria, **2001–2006**
with distinction.

Manufacturing Computer Science

Ph.D. thesis

title: *Modeling Activation Processes in Human Memory to Improve Tag Recommendations*

supervisors: Prof. Stefanie Lindstaedt, Prof. Tobias Ley, Ass.Prof. Elisabeth Lex

Master thesis

title: *Combining Computer-Supported, Collaborative Learning with E-Assessment: Enhancing a Wiki System with Flexible Assessment Methods*

supervisors: Prof. Christian Gütl, Ass.Prof. Mohammad Al-Smadi

Bachelor thesis

title: *Peer Assessment in Computer Science and Modern Technologies to Build a Flexible E-Learning System around it*

supervisors: Prof. Christian Gütl, Ass.Prof. Mohammad Al-Smadi

Positions held

Post-doctoral researcher, *Know-Center GmbH*, Graz. **2017–now**

Research deputy head with focus on recommender systems.

Selected projects:

- AI4EU, H2020, co-task lead and researcher.
- Analytics for Everyday Learning (AFEL), H2020, task lead and researcher.
- Scalable Recommendation-as-a-Service (ScaR), researcher and developer.

Researcher and developer, *Know-Center GmbH*, Graz. **2012–2017**

Working on various European and COMET-funded projects in the Social Computing area.

Selected projects:

- Data Market Austria (DMA), FFG, researcher.
- MoreGrasp, H2020, co-task lead and researcher.
- Organic.Lingua, FP7, co-task lead and developer.

Ph.D. candidate, *Graz University of Technology*, Graz. **2012–2017**

Institute of Interactive Systems and Data Science (ISDS).

Selected projects:

- Learning Layers, FP7, co-work package lead and researcher.
- TagRec, main developer and researcher.

Project assistant, *Graz University of Technology*, Graz. **2010–2012**

Institute for Information Systems and Computer Media (IICM).

Selected projects:

- ALICE, FP7, co-work package lead and researcher.
- Service-Oriented, Flexible and Interoperable Assessment (SOFIA), developer.

Developer, *IVM Technical Consultants*, Graz. **2009–2010**

Working on software projects in the automotive sector.

Selected projects:

- Visualization of measurement data, developer.
- Automated testing of graphical user interfaces, developer.

Teaching experience

Supervision: Wagner, M. Diversity-Aware Recommendation of Tweets. Master thesis. Graz University of Technology. 2018.

Supervision: Punz, A. Detection and Analysis of Communities on Twitter. Bachelor thesis. Graz University of Technology. 2016.

Course support: Lex, E. Science 2.0. Graz University of Technology. 2016.

Course support: Parra, D. and Trattner, C. Recommender Systems. PUC Chile. 2014.

Practical assignment: Lex, E. and Trattner, C. Web Science. Graz University of Technology. 2014.

Practical assignment: Gütl, C. Information Search and Retrieval. Graz University of Technology. 2011 and 2012.

Teaching assistant: Legenstein, R. Datastructures and Algorithms. Graz University of Technology. 2009.

Awards and grants

Nominated for ACM SIGCHI Outstanding Dissertation Award: Institute of Interactive Systems and Data Science of Graz University of Technology for Ph.D. thesis. 2018.

FFG – K1 Research Center Grant: 20,4M for second funding period (2019 - 2022) of the Know-Center GmbH as co-writer

Project grant: AI4EU, H2020, 147k for the Know-Center as co-writer. 2018.

Travel grant: European Symposium on Computational Social Science (ESCSS) in Cologne, Canada. 2018.

Nominated for Award of Excellence: Faculty of Informatics of Graz University of Technology for Ph.D. thesis. 2018.

Dissertation Award: Arbeiterkammer Steiermark, Austria. 2018.

Nominated for Heinz Zemanek Award: Faculty of Informatics of Graz University of Technology for Ph.D. thesis. 2018.

Project Grant: OpenAIRE Matchmaker, OpenAIRE Open Tender Calls LOT II Value-added services, 15k for the Know-Center as co-writer. 2018.

Project Grant: Health-Literacy und Diversity (HeLi-D), Gesundheitsfonds Steiermark (2017), 75k for the Know-Center as co-writer. 2018.

Travel Grant: ACM Conference on Hypertext and Social Media (HT'2016) in Halifax, Canada. 2016.

Project Grant: Data Market Austria (DMA), IKT der Zukunft, 286k for the Know-Center as co-writer. 2015.

Best Demo Honourable Mention: Conference on Knowledge Technologies and Data-Driven Business (i-Know'2015) in Graz, Austria. 2015.

Best Poster Award: ACM Conference on Hypertext and Social Media (HT'2014) in Santiago, Chile. 2014.

Organization and chairing

CIKM'2018: Recommendation track of the ACM Conference on Information and Knowledge Management, Turin, Italy, 2018.

RSBDA'2017: Second Workshop on Recommender Systems and Big Data Analytics co-located with i-KNOW 2017, Graz, Austria, 2017.

RSBDA'2016: First Workshop on Recommender Systems and Big Data Analytics co-located with i-KNOW 2016, Graz, Austria, 2016.

i-Know'2015: Social Computing track of the International Conference on Knowledge Technologies and Data-Driven Business, Graz, Austria, 2015.

i-Know'2013: Science 2.0 track of the International Conference on Knowledge Technologies and Data-Driven Business, Graz, Austria, 2013.

Programm committee membership and reviewing

WebSci'2019: 11th ACM Conference on Web Science, 2019

ESCSS'2019: Third European Symposium on Computational Social Science, 2019

TCSC: IEEE Transactions on Computational Social Systems, 2019

ASC: Applied Soft Computing, 2019

MSM'2019: Workshop on Modeling Social Media - Mining, Modeling and Learning from Social Media co-located with WWW'2019 conference, San Francisco, USA, 2019.

PlosOne: PlosOne Journal, 2018.

Journal of Systems and Software: Elsevier, 2018.

TKDE: IEEE Transactions of Knowledge and Data Management, 2018.

INRT: Information Retrieval Journal, 2018.

AJSE: Arabian Journal for Science and Engineering, 2018.

RecSys'2018: ACM Conference on Recommender Systems (poster track), Vancouver, Canada, 2018.

UMAP'2018: Conference on User Modeling, Adaptation and Personalization, Singapore, Singapore, 2018.

SoAPS'2018: Workshop on Social Aspects in Personalization and Search co-located with ECIR'2018 conference, Grenoble, France, 2018.

AFEL'2018: Analytics for Everyday Learning Workshop co-located with ECTEL'2018 conference, Leeds, UK, 2018.

SNAM: Social Network Analysis and Mining Journal, 2017 and 2018.

C&E: Computers and Education Journal, 2017.

TLT: Transactions on Learning Technologies, 2017.

SNAMS'2017: International Symposium on Social Networks Analysis, Management and Security, Prague, Czech Republic, 2017.

WebSci'2017: International ACM Web Science Conference (poster track), Troy, New York, 2017.

OpenSym'2017: International Symposium on Open Collaboration, Galway, Ireland, 2017.

MSM'2015: International Workshop on Modeling Social Media co-located with WWW'2015, Florence, Italy, 2015.

UMAP'2014: Conference on User Modelling, Adaption and Personalization, Aalborg, Denmark, 2014.

EC-TEL'2014: European Conference on Technology Enhanced Learning, Graz, Austria, 2014.

Publication list (in chronological order)

- [1] I. Hasani-Mavriqi, D. Kowald, D. Helic, and E. Lex, "Consensus dynamics in online collaboration systems," *Computational Social Networks*, vol. 5, no. 1, 2018.
- [2] D. Kowald, P. Seitlinger, T. Ley, and E. Lex, "The impact of semantic context cues on the user acceptance of tag recommendations: An online study," in *Companion of the The Web Conference 2018, WWW '18*, 2018.
- [3] M. d'Aquin, D. Kowald, A. Fessl, E. Lex, and S. Thalmann, "Afel-analytics for everyday learning," in *Companion of the The Web Conference 2018, WWW '18*, 2018.
- [4] E. Lex, T. Ross-Hellauer, and D. Kowald, "Recommender systems as enabling technology to interlink scholarly information," in *Proceedings of the Workshop on Researcher Centric Scholarly Communication co-located with The Web Conference 2018, RCSC@WWW '18*, 2018.
- [5] T. Duricic, E. Lacic, D. Kowald, and E. Lex, "Trust-based collaborative filtering: Tackling the cold start problem using regular equivalence," in *Proceedings of the 12th ACM Conference on Recommender Systems, RECSYS '18*, 2018.
- [6] D. Kowald, E. Lacic, D. Theiler, and E. Lex, "Afel-rec: A recommender system for providing learning resource recommendations in social learning environments," in *Proceedings of the Social Interaction-Based Recommender Systems Workshop co-located with the 27th ACM International Conference on Information and Knowledge Management, SIR@CIKM '18*, 2018.
- [7] E. Lacic, D. Kowald, and E. Lex, "Neighborhood troubles: On the value of user pre-filtering to speed up and enhance recommendations," in *Proceedings of the Workshop on Entity Retrieval co-located with the 27th ACM International Conference on Information and Knowledge Management, EYRE@CIKM '18*, 2018.
- [8] E. Lacic, D. Kowald, M. Reiter-Haas, V. Slawicek, and E. Lex, "Beyond accuracy optimization: On the value of item embeddings for student job recommendations," in *Proceedings of the International Workshop on Multi-dimensional Information Fusion for User Modeling and Personalization co-located with the 11th ACM International Conference on Web Search and Data Mining, IFUP@WSDM '18*, 2018.
- [9] D. Kowald and E. Lex, "Studying confirmation bias in hashtag usage on twitter," in *Proceedings of the 2nd European Symposium on Societal Challenges in Computational Social Science, EUROCSS '18*, 2018.
- [10] E. Lex, M. Wagner, and D. Kowald, "Mitigating confirmation bias on twitter by recommending opposing views," in *Proceedings of the 2nd*

European Symposium on Societal Challenges in Computational Social Science, EUROCSS '18, 2018.

- [11] A. Fessler, D. Kowald, S. L. Sola, A. Moreno, R. Alonso, and S. Thalmann, "Analytics for everyday learning from two perspectives: Knowledge workers and teachers," in *Proceedings of the Analytics for Everyday Learning Workshop co-located with European Conference on Technology Enhanced Learning Conference*, AFEL@ECTEL '18, 2018.
- [12] S. Dennerlein, D. Kowald, V. Pammer-Schindler, E. Lex, and T. Ley, "Simulation-based co-creation of algorithms," in *Proceedings of the Co-Creation in the Design, Development and Implementation of Technology-Enhanced Learning Workshop co-located with European Conference on Technology Enhanced Learning*, CCTEL@ECTEL '18.
- [13] M. Traub, H. Gursch, D. Kowald, D. Theiler, R. Kern, and E. Lex, "Providing recommendations of services, datasets and end-users in the data market austria (dma)," in *Proceedings of the Decision Making and Recommender Systems Workshop*, DMRS '18, 2018.
- [14] D. Kowald, S. C. Pujari, and E. Lex, "Temporal effects on hashtag reuse in twitter: A cognitive-inspired hashtag recommendation approach," in *Proceedings of the 26th International Conference on World Wide Web*, WWW '17, 2017.
- [15] D. Kowald, S. Kopeinik, and E. Lex, "The tagrec framework as a toolkit for the development of tag-based recommender systems," in *Adjunct Publication of the 25th Conference on User Modeling, Adaptation and Personalization*, UMAP '17, 2017.
- [16] S. Kopeinik, D. Kowald, I. Hasani-Mavriqi, and E. Lex, "Improving collaborative filtering using a cognitive model of human category learning," *The Journal of Web Science*, vol. 2, no. 1, 2017.
- [17] P. Seitlinger, T. Ley, D. Kowald, D. Theiler, I. Hasani-Mavriqi, S. Dennerlein, E. Lex, and D. Albert, "Balancing the fluency-consistency tradeoff in collaborative information search with a recommender approach," *International Journal of Human-Computer Interaction*, vol. 34, no. 6, 2017.
- [18] D. Kowald and E. Lex, "Overcoming the imbalance between tag recommendation approaches and real-world folksonomy structures with cognitive-inspired algorithms," in *Proceedings of the 1st European Symposium on Societal Challenges in Computational Social Science*, EUROCSS '17, 2017.
- [19] M. d'Aquin, A. Adamou, S. Dietze, B. Fetahu, U. Gadiraju, I. Hasani-Mavriqi, P. Holtz, J. Kimmerle, D. Kowald, E. Lex, S. Lopez.Sola, R. Maturana, V. Sabol, P. Troullinou, and E. Veas, "Afel: Towards measuring online activities contributions to self-directed learning," in *Proceedings of*

Proceedings of the 7th Workshop on Awareness and Reflection in Technology Enhanced Learning co-located with the 12th European Conference on Technology Enhanced Learning: Adaptive and Adaptable Learning, ARTEL@ECTEL '17, 2017.

- [20] E. Lacic, D. Kowald, and E. Lex, "Tailoring recommendations for a multi-domain environment," in *Proceedings of the Workshop on Intelligent Recommender Systems by Knowledge Transfer and Learning co-location with the 11th ACM Conference on Recommender Systems, RECSYSKTL@RECSYS '17, 2017.*
- [21] D. Kowald, "Modeling activation processes in human memory to improve tag recommendations," *SIGIR Forum*, 2017.
- [22] D. Kowald, *Modeling Activation Processes in Human Memory for Tag Recommendations: Using Models from Human Memory Theory to Implement Recommender Systems for Social Tagging and Microblogging Environments*. Suedwestdeutscher Verlag fuer Hochschulschriften, 2017.
- [23] A. Felfernig, R. Klamma, T. Ley, D. Kowald, E. Lex, and V. Pammer-Schindler, eds., *Focused topic on "Recommender systems and social network analysis" in Journal of Universal Computer Science, JUCS, 2017.*
- [24] M. Aehnelt, O. Bluder, G. Breitfuss, R. Kaiser, R. Kern, R. Klamma, D. Kowald, T. Ley, E. Lex, C. Müller, V. Pammer-Schindler, R. Rauter, G. Reiner, and E. Veas, eds., *Proceedings of the Workshop Papers of i-Know 2017, CEUR, 2017.*
- [25] D. Kowald and E. Lex, "The influence of frequency, recency and semantic context on the reuse of tags in social tagging systems," in *Proceedings of the 27th ACM Conference on Hypertext and Social Media, HT '16, 2016.*
- [26] E. Lacic, D. Kowald, and E. Lex, "High enough?: Explaining and predicting traveler satisfaction using airline reviews," in *Proceedings of the 27th ACM Conference on Hypertext and Social Media, HT '16, 2016.*
- [27] C. Trattner, D. Kowald, P. Seitlinger, T. Ley, and S. Kopeinik, "Modeling activation processes in human memory to predict the use of tags in social bookmarking systems," *The Journal of Web Science*, vol. 2, no. 1, 2016.
- [28] S. Kopeinik, D. Kowald, and E. Lex, "Which algorithms suit which learning environments? a comparative study of recommender systems in tel," in *Proceedings of the 11th European Conference on Technology Enhanced Learning, ECTEL '16, 2016.*
- [29] P. Santos, S. Dennerlein, D. Theiler, J. Cook, T. Treasure-Jones, D. Holley, M. Kerr, G. Attwell, D. Kowald, and E. Lex, "Going beyond your personal learning network, using recommendations and trust through a multimedia question-answering service for decision-support: A case study in the healthcare," *Journal of Universal Computer Science*, vol. 22, no. 3, 2016.

- [30] E. Lacic, D. Kowald, and E. Lex, "Need help? recommending social institutions," in *Proceedings of the Workshop on Recommender Systems and Big Data Analytics co-located with the International Conference on Knowledge Technologies and Data-driven Business*, RSBDA@i-KNOW '16, 2018.
- [31] D. Kowald and E. Lex, "Evaluating tag recommender algorithms in real-world folksonomies: A comparative study," in *Proceedings of the 9th ACM Conference on Recommender Systems*, RECSYS '15, 2015.
- [32] E. Lacic, D. Kowald, M. Traub, G. Luzhnica, J. Simon, and E. Lex, "Tackling cold-start users in recommender systems with indoor positioning systems," in *In Poster Proceedings of the 9th ACM Conference on Recommender Systems*, RECSYS' 15, 2015.
- [33] E. Lacic, M. Traub, D. Kowald, and E. Lex, "Scar: Towards a real-time recommender framework following the microservices architecture," in *Proceedings of the Workshop on Large Scale Recommender Systems at 9th ACM Conference on Recommender Systems*, LRS@ RECSYS'15, 2015.
- [34] D. Kowald, "Modeling cognitive processes in social tagging to improve tag recommendations," in *Companion Proceedings of the 24th International Conference on World Wide Web*, WWW '15 Companion, 2015.
- [35] P. Seitlinger, D. Kowald, S. Kopeinik, I. Hasani-Mavriqi, E. Lex, and T. Ley, "Attention please! a hybrid resource recommender mimicking attention-interpretation dynamics," in *Companion Proceedings of the 24th International Conference on World Wide Web*, WWW '15 Companion, 2015.
- [36] D. Kowald, S. Kopeinik, P. Seitlinger, T. Ley, D. Albert, and C. Trattner, "Refining frequency-based tag reuse predictions by means of time and semantic context," in *Mining, Modeling, and Recommending 'Things' in Social Media*, 2015.
- [37] D. Kowald, P. Seitlinger, S. Kopeinik, T. Ley, and C. Trattner, "Forgetting the words but remembering the meaning: Modeling forgetting in a verbal and semantic tag recommender," in *Mining, Modeling, and Recommending 'Things' in Social Media*, 2015.
- [38] E. Lacic, D. Kowald, L. Eberhard, C. Trattner, D. Parra, and L. B. Marinho, "Utilizing online social network and location-based data to recommend products and categories in online marketplaces," in *Mining, Modeling, and Recommending 'Things' in Social Media*, 2015.
- [39] C. Trattner, D. Kowald, and E. Lacic, "Tagrec: towards a toolkit for reproducible evaluation and development of tag-based recommender algorithms," *ACM SIGWEB Newsletter*, Winter, 2015.

- [40] S. Dennerlein, D. Kowald, E. Lex, D. Theiler, E. Lacic, and T. Ley, "The social semantic server: a flexible framework to support informal learning at the workplace," in *Proceedings of the 15th International Conference on Knowledge Technologies and Data-driven Business*, i-KNOW '15, 2015.
- [41] M. Traub, D. Kowald, E. Lacic, P. Schoen, G. Supp, and E. Lex, "Smart booking without looking: providing hotel recommendations in the trip rebel portal," in *Proceedings of the 15th International Conference on Knowledge Technologies and Data-driven Business*, i-KNOW '15, 2015.
- [42] D. Kowald, P. Seitlinger, T. Ley, and E. Lex, "Modeling activation processes in human memory to improve tag recommendations," in *Proceedings of the 2nd GESIS Computational Social Sciences Winter Symposium*, CSSWS' 15, 2015.
- [43] D. Kowald, P. Seitlinger, C. Trattner, and T. Ley, "Long time no see: The probability of reusing tags as a function of frequency and recency," in *Companion Proceedings of the 23rd International Conference on World Wide Web*, WWW '14 Companion, 2014.
- [44] E. Lacic, D. Kowald, D. Parra, M. Kahr, and C. Trattner, "Towards a scalable social recommender engine for online marketplaces: The case of apache solr," in *Proceedings of the Social Recommender Systems Workshop co-located with the 23rd International Conference on World Wide Web*, SRS@WWW '14, 2014.
- [45] D. Kowald, E. Lacic, and C. Trattner, "Tagrec: Towards a standardized tag recommender benchmarking framework," in *Proceedings of the 25th ACM Conference on Hypertext and Social Media*, HT '14, 2014.
- [46] E. Lacic, D. Kowald, and C. Trattner, "Socrecm: A scalable social recommender engine for online marketplaces," in *Proceedings of the 25th ACM conference on Hypertext and social media*, HT '14, 2014.
- [47] E. Lacic, D. Kowald, P. Seitlinger, C. Trattner, and D. Parra, "Recommending items in social tagging systems using tag and time information," in *Proceedings of the 1st International Workshop on Social Personalisation co-located with the 25th ACM Conference on Hypertext and Social Media*, SP@HT '14, 2014.
- [48] P. Seitlinger, D. Kowald, C. Trattner, and T. Ley, "Recommending tags with a model of human categorization," in *Proceedings of the 22nd ACM international conference on Conference on information and knowledge management*, CIKM '13, 2013.
- [49] D. Kowald, S. Dennerlein, D. Theiler, S. Walk, and C. Trattner, "The social semantic server - a framework to provide services on social semantic network data.," in *I-SEMANTICS (Posters and Demos)*, vol. 1026 of *I-SEMANTICS '13*, 2013.