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<http://www.rizoIU.eu/>



CURRICULUM VITAE

Employment history

- 08/2021 – **Senior Lecturer**, Data Science Institute, University of Technology Sydney
current: *Research*: information diffusion models, mis-/disinformation detection, online influence operations
Supervision: 1 postdoc, 5 PhD students, 5 Masters/Honours students.
- 2019 – 2021: **Lecturer**, Faculty of Engineering and IT, University of Technology Sydney
Research: information diffusion models, online popularity prediction models, stochastic processes
Supervision: 1 postdoc, 4 PhD students, 3 Masters/Honours students/Research Assistants.
- 2016 – 2019 **Research Fellow, Lecturer**, Eng. and Comp. Science, Australian National University
Research: information diffusion models, online popularity prediction models, stochastic point processes, machine learning and social media analysis.
Teaching: Document Analysis, Advanced Databases and Data Mining (Bachelors/Masters).
Leadership: course convener for the Document Analysis course, co-PI for two research grants,
Supervision: 4 PhD students (2 as main supervisor), 3 Masters/Honours students.
- 2014 – 2016 **Research Scientist**, Optimisation Research Group, National ICT Australia (NICTA)
Research: online privacy, big social data analytics, data mining.
Supervision: 2 PhD students, 1 Masters/Honours student.
- 2013 – 2014 **Postdoctoral Fellow**, ERIC laboratory, Lumière University Lyon, France.
Research: ontology construction from text, knowledge graphs evolution for brand management.
Teaching: Machine Learning, Software Development Methodologies, Data Mining, Object Oriented Programming, Unix Operating Systems, Calculus software (course convener)
Supervision: 4 Honours theses, 9 industrial internships.
Leadership: developed the Machine Learning course.

Education background

- 2009 – 2013 **PhD in Computer Science**, Lumière University Lyon, France.
(June 24th 2013) “Semi-supervised structuring of complex data”, supervision S. Lallich and J. Velcin.
- 2008 – 2009 **Masters Degree in Data Mining and Knowledge Engineering**,
(double diploma) Polytechnic School, Nantes University, France.
- 2004 – 2009 **Engineer Degree in Systems and Computer Engineering**
School of Computer Science, Polytechnic University of Bucharest, Romania.

Grants, Projects and Consulting – AU\$1.7M in secured funding

- 2021: UTS FEIT Cross-Faculty Scheme, “**The dynamics of disinformation across traditional and social media**”, AU\$20K, Lead-CI. Understand the dynamic interaction between the traditional and social media ecosystems that results in the flow of disinformation and problematic content.
- 2021 – 2022: Defence Science and Technology (DST). “**Forensic analysis and real-time detection of dis-information campaigns**”, AU\$100K, Lead-CI. Real-time detection of disinformation campaigns using multi-faceted social media analysis.
- 2021: UTS2027 strategic grants, “**Tailored Recruitment Analytics and Curriculum Knowledge (TRACK)**”, AU\$1.2M, CI. Build student and staff facing tools that use Skills Analytics.
- 2020-2021: Facebook Research grants, “**Using computational modelling of user behaviour and machine learning to counter the diffusion of hate speech across social media**”, US\$60k, CI. Use ethnographic methods to identify and monitor a number of persona associated with hate speech diffusion targeting vulnerable populations.
- 2019 – 2020: National Security College’s Green policy grants, “**Tracking Disinformation Campaigns Across Terrains: Implications for Policy**”, AU\$50K, CI. Quantify the scale of the problem of

disinformation in order to co-design responses with policy partners.

- 2019 – 2020: UTS FEIT Cross-Faculty Scheme, “**SocialSense: Making sense of the opinions and interactions of online users**”, AU\$20K, CI. Study the diffusion and polarization of opinions online, mixing an ethnographic approach with computational modelling of behaviour.
- 2019: Data61 Challenge model grants, “**Adaptive skills taxonomy to enable labour market agility**”, AU\$350K, CI. Understand the change of demand and supply of skills in a timely and efficient manner in order to provide information to inform employment decisions.
- 2019 Industrial consulting with a merger/acquisition. AU\$10.5k, Lead-CI.
- 2018 ANU Social Science Cross-College Grants, “**Advanced tools and methods for analysing the role and influence of bots in social media**”, AU\$50K, Lead-CI. The impact of automation in the form of socialbots on deliberative democracy – how socialbots hijack the public discourse.
- 2018 ANU Social Science Cross-College Grants, “**Identify Hate Speech and Predict Mass Atrocities**”, AU\$30K, Lead-CI. Can “hate speech” be reliably measured to predict political violence?

Honours, awards, prizes and service

- Service** Served in the Expert Round table for the Defamation Law Reform, for the attorney general’s office.
- Area chair / PC member** Area Chair: ECML-PKDD’21
PC member: WWW’20, AAAI’20, WWW’19, AAAI’19, ICWSM’19
- Reviewing** Journal of Machine Learning Research, Journal IEEE Transactions on Multimedia, Computational Intelligence, Transactions on Information Systems, Journal Transactions on Knowledge Discovery from Data; conferences WWW, ICWSM, NIPS, AAAI.
- Research visits** March 2019: One month research visit in Saint Etienne at the French CNRS laboratory Hubert Curien, collaborating with Prof. Christine Largeron on information diffusion in online communities.
- Conference organisation** **10/2012:** Discovery Science 2012 and Algorithm Learning Technology 2012, Lyon.
09/2011: Web Intelligence 2011 and Intelligent Agent Technology 2011, Lyon.
- Awards, material and travel grants** **Awards:** French [CNRS IDEXLYON](#) award for rising stars (2019), Best student paper award ICTAI, Athens, Greece (2012), ERASMUS International student exchange award (2009)
Travel Grants: ECR Travel Awards (2018, 2015), Rhône-Alpes local government (2013),
Material Grant: NVIDIA GPU Grant Program (2015).

Interests & Skills

- Research**
- Stochastic behavioural modelling; online information diffusion; online popularity modelling.
 - Detecting disinformation campaigns and malicious activity, information warfare, online influence and disruptive socialbots in democratic processes.
 - Labour markets in automation age, measuring skill similarity, labour upskilling, job ads data.
- Technical skills**
- big data mining and analysis, machine learning, natural language processing, online social media analysis, statistical analysis, industrial project collaboration

Recent invited talks

- 11/2019 **Information warfare: socialbots and Russian online trolls in the US elections.** Invited talk at the Defence Science and Technology (DST), Adelaide, Australia.
- 05/2019 **#DebateNight: Role of Twitter Socialbots During US Presidential Debate.** Invited talk at the Computer Society of the IEEE ACT Section, Canberra, Australia.
- 06/2018 **Hawkes Intensity Processes for modelling online popularity and virality.** Invited talk at Facebook Core Research, Palo Alto, California, USA.
- 06/2018 **User engagement with online video and the unpredictability of online popularity.** Invited talk at Netflix Research, San Jose, California, USA.
- 05/2018 **Scalable influence estimation from online information diffusions.** Research visit at the Max Plank Institute for Software Systems, Kaiserslautern, Germany.

- 06/2017 **Hawkes Intensity Processes for Social Media Popularity.** University of Sydney, Australia.
- 03/2016 **Evolution of Privacy Loss in Wikipedia.** Invited talk, March session of the Monthly Wikimedia Research Showcase, San Francisco, USA.

Teaching, supervision & academic software

Teaching & supervision

- 650+ hours of teaching experience at all levels in **Software Engineering**, **Data Science** and **Machine Learning**¹, course coordinator (convenor).
- 55+ supervised students & staff: 1 postdoc, 4 PhD students, 4 RA, 1 visiting postgrad students, 10 Honours students, 4 summer scholar students, more than 30 coursework masters students;
- **research group**: 5 PhD students (main supervisor), 4 masters/Honours

Open-source software development

- *HIPie* describes and predicts the online popularity of Youtube videos (2017) [Kong et al, WWW18].
Public live version: www.hipie.ml Demo video: <https://youtu.be/x5xIf4vU5cI>
Source code: <https://github.com/computationalmedia/hipie>
- *CommentWatcher* analyses online discussion forums and their social networks of users (2014).
Website: <http://rizoiu.eu/commentwatcher> Demo video: http://rizoiu.eu/commentwatcher/Video_demonstration.html

Selected recent publications

Publications summary: 53 peer reviewed publications, 851 citations, H-index 14 (source: *Google Scholar* 08/2021)².

Full publication list at <https://www.behavioral-ds.ml/publication/>

- [1] Dawson, N., Williams, M.-A., & **Rizoiu, M.-A.** (2021). *Skill-driven recommendations for job transition pathways*. **PLOS ONE**, 16(8), e0254722. <https://doi.org/10.1371/journal.pone.0254722>
- [2] McCarthy, P. X., Gong, X., Eghbal, S., Falster, D. S., & **Rizoiu, M.-A.** (2021). *Evolution of diversity and dominance of companies in online activity*. **PLOS ONE**, 16(4), e0249993. <https://doi.org/10.1371/journal.pone.0249993>
- [3] Unwin, H. J. T., Routledge, I., Flaxman, S., **Rizoiu, M.-A.**, Lai, S., Cohen, J., ... Bhatt, S. (2021). Using Hawkes Processes to model imported and local malaria cases in near-elimination settings. **PLOS Computational Biology**, 17(4).
- [4] Ram, R., Kong, Q., & **Rizoiu, M.-A.** (2021). *Birdspotter: A Tool for Analyzing and Labeling Twitter Users*. In 14th ACM International Conference on Web Search and Data Mining (**WSDM'21**), pp. 918–921.
- [5] Largeron, C., Mardale, A., & **Rizoiu, M.-A.** (2021). *Linking the Dynamics of User Stance to the Structure of Online Discussions*. In Symposium on Intelligent Data Analysis (**IDA'21**), pp. 275–286.
- [6] Kong, Q., Ram, R., & **Rizoiu, M.-A.** (2021). *Evently: Modeling and Analyzing Reshare Cascades with Hawkes Processes*. In 14th ACM International Conference on Web Search and Data Mining (**WSDM'21**), pp. 1097–1100.
- [7] Dawson, N., Molitorisz, S., **Rizoiu, M.-A.**, & Fray, P. (2021). *Layoffs, inequity and COVID-19: A longitudinal study of the journalism jobs crisis in Australia from 2012 to 2020*. **Journalism**. p. 146488492199628
- [8] Kong, Q., **Rizoiu, M.-A.**, & Xie, L. (2020). *Describing and Predicting Online Items with Reshare Cascades via Dual Mixture Self-exciting Processes*. In Proceedings of the 29th ACM International Conference on Information & Knowledge Management (**CIKM'20**), pp. 645–654, New York.
- [9] Kong, Q., Rizoiu, M.-A., & Xie, L. (2020). *Modeling Information Cascades with Self-exciting Processes via Generalized Epidemic Models*. In 13th International Conference on Web Search and Data Mining (**WSDM'20**), pp. 286–294.
- [10] Wu, S., **Rizoiu, M.-A.**, & Xie, L. (2020). *Variation across Scales: Measurement Fidelity under Twitter Data Sampling*. In International AAAI Conference on Web and Social Media (**ICWSM '20**), pp. 1–10.
- [11] Dawson, N., **Rizoiu, M.-A.**, Johnston, B., & Williams, M.-A. (2020). *Predicting Skill Shortages in Labor Markets: A Machine Learning Approach*. In 2020 IEEE International Conference on Big Data (**Big Data'20**), pp. 3052–3061.
- [12] Zhang, R., Walder, C., & **Rizoiu, M.-A.** (2020). *Variational Inference for Sparse Gaussian Process Modulated Hawkes Process*. In the AAAI Conference on Artificial Intelligence (**AAAI'20**), 34(04), 6803–6810.
- [13] Zhang, R., Walder, C., Bonilla, E. V., **Rizoiu, M.-A.**, & Xie, L. (2020). *Quantile Propagation for Wasserstein-Approximate Gaussian Processes*. In Conference on Neural Information Processing Systems (**NeurIPS'20**).
- [14] Kern, M. L., McCarthy, P. X., Chakrabarty, D., & **Rizoiu, M.-A.** (2019). *Social media-predicted personality traits and values can help match people to their ideal jobs*. Proceedings of the National Academy of Sciences (**PNAS**), 201917942. (**CoRE: A*, H5: 227, I.F.: 9.674**)
- [15] Kong, Q., **Rizoiu, M.-A.**, & Xie, L. (2020). *Modeling Information Cascades with Self-exciting Processes via Generalized Epidemic Models*. In ACM International Conference on Web Search and Data Mining (**WSDM'20**). Houston, Texas. (**CoRE Rank: A*, a.r.: 15%, h5: 51**)
- [16] Wu, S., **Rizoiu, M.-A.**, & Xie, L. *Estimating Attention Flow in Online Video Networks*. In ACM Conference on Computer-Supported Cooperative Work and Social Computing (**CSCW'19**), pp. 1-21. 2019.
- [17] Kim, D., Graham, T., Wan, Z., & **Rizoiu, M.-A.** Analysing user identity via time-sensitive semantic edit distance (t-SED): A case study of Russian trolls on Twitter. **Journal of Computational Social Science**. pp.1-21, 2019.
- [18] Zhang, R., Walder, C., **Rizoiu, M.-A.**, & Xie, L. *Efficient Non-parametric Bayesian Hawkes Processes*. In: International

1 See full teaching & supervision experience at http://www.rizoiu.eu/documents/RIZOIU_teaching-statement.pdf

2 Metrics key. **ERA/CoRE**: Australian Publication Ranking; **a.r.**: acceptance rate for conferences; **h5**: the h5 metric of the venue (source Google Scholar).

- Joint Conference on Artificial Intelligence (**IJCAI'19**), Macao, China, 2019. (**CoRE Rank: A***, **a.r.: 17%**, **h5: 61**)
- [19] **Rizoiu, M.-A.**, Mishra, S., Kong, Q., Carman, M., & Xie, L. *SIR-Hawkes: Linking Epidemic Models and Hawkes Processes to Model Diffusions in Finite Populations*. In: Proceedings of International Conference on World Wide Web (**WWW '18**), Lyon, France, pp. 1–9, 2018. (**CoRE Rank: A***, **a.r.: 14%**, **h5: 77**)
- [20] **Rizoiu, M.-A.**, Graham, T., Zhang, R., Zhang, Y., Ackland, R. J., & Xie, L. *#DebateNight: The Role and Influence of Socialbots on Twitter During the 1st U.S. Presidential Debate*. In International AAAI Conference on Web and Social Media (**ICWSM'18**), pp. 1–10, 2018. (**a.r.: 16%**, **h5: 52**)
- [21] Wu, S., **Rizoiu, M.-A.**, & Xie, L. (2017). *Measuring Video Engagement: An Empirical Study on YouTube*. In Proceedings of the International Conference on Web and Social Media (**ICWSM '18**), pp. 1–9, 2018. (**a.r.: 16%**, **h5: 52**)
- [22] **Rizoiu, M.-A.**, Lee, Y., Mishra, S., & Xie, L. *A Tutorial on Hawkes Processes for Events in Social Media*. In “Research Frontiers of Multimedia”, S.-F. Chang (Ed.), (2017), pp. 1–26, ACM Books.
- [23] **Rizoiu, M.-A.**, Xie, L., Sanner, S., Cebrian, M., Yu, H., & Van Hentenryck, P., *Expecting to be HIP: Hawkes Intensity Processes for Social Media Popularity*. In: Proceedings of International Conference on World Wide Web (**WWW '17**), Perth, Australia, pp. 735-744, 2017. (**CoRE Rank: A***, **a.r.: 17%**, **h5: 74**)
- [24] Mishra, S., **Rizoiu, M.-A.**, & Xie, L., *Feature Driven and Point Process Approaches for Popularity Prediction*. In: Proceedings of International Conference on Information and Knowledge Management (**CIKM '16**), Indianapolis, USA, p. 1069–1078, 2016. (**CoRE Rank: A**, **a.r.: 17%**, **h5: 42**)
- [25] **Rizoiu, M.-A.**, Xie, L., Caetano, T., & Cebrian, M., *Evolution of Privacy Loss in Wikipedia*. In: Proc. International Conference on Web Search and Data Mining (**WSDM '16**), San Francisco, USA, pp. 215-224, February 2016. (**CoRE Rank: A***, **a.r.: 18%**, **h5: 58**)