Marian-Andrei RIZOIU

address: **CB02.12, UTS, 15 Broadway, Ultimo NSW 2007**
email: Marian-Andrei.Rizoiu@uts.edu.au
website: https://www.behavioral-ds.ml/authors/ma-rizoiu/ | http://www.rizoiu.eu/

CURRICULUM VITAE

Employment history

01/2019 – current: **Lecturer,** Faculty of Engineering and IT, University of Technology in 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.
Leadership: engage with Data61's Ribbit
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 (June 24th 2013) **PhD in Computer Science**, Lumière University Lyon, France.
"Semi-supervised structuring of complex data", supervision S. Lallich and J. Velcin.

2008 – 2009 (double diploma) **Masters Degree in Data Mining and Knowledge Engineering,**
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 – 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.

PC member WWW'19, AAAI'19, ICWSM'19, WWW'20, AAAI'20.

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

- 600+ hours of teaching experience at all levels in **Software Engineering**, **Data Science** and **Machine Learning**[1], course coordinator (convenor).
- 45+ supervised students: 4 PhD students, 2 RA/postdoc, 1 visiting postgrad students, 5 Honours students, 4 summer scholar students, more than 30 coursework masters students;
- **research group:** 1 postdoc, 4 PhD students (main supervisor), 1 masters/Honours, 1 RA

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/x5xIf4vUScI
  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: 52 peer reviewed publications, 735 citations, H-index 13 (source: *Google Scholar 04/2021*)[2].
Full publication list at https://www.behavioral-ds.ml/publication/

[1] 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**.

[2] 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).

[3] 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.

[4] 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.

[5] 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.

[6] 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

[7] 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.

[8] 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.

[9] 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.

[10] 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.

[11] 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.

[12] 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**).

[13] 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)**

[14] 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)**

[15] 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.

[16] 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.

[17] Zhang, R., Walder, C., **Rizoiu, M.-A.**, & Xie, L. *Efficient Non-parametric Bayesian Hawkes Processes.* In: International Joint Conference on Artificial Intelligence **(IJCAI'19)**, Macao, China, 2019. **(CoRE Rank: A*, a.r.: 17%, h5: 61)**

[18] **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)**

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).*

[19] **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)**

[20] 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)**

[21] **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.

[22] **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)**

[23] 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)**

[24] **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)**