



# Djamel Abdelkader Zighed

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## Profile

Over forty years of research, teaching and scientific leadership at the crossroads of **data engineering** and the **humanities and social sciences**. Foundational work in **topological learning** (induction graphs, pretopology, entropy measures, neighbourhood-based classification) and in shaping the French-speaking data mining community. Successive directorships of the **ERIC research lab** (Lumière Lyon 2), the **Institute of Human Sciences** (MSH Lyon / Saint-Étienne), and the digital department of the **Agence Universitaire de la Francophonie** (AUF — Agency of Francophone Universities), where I led the **IDNEUF** initiative for digital development in French-speaking higher education. More recently, work on the relations between scientific knowledge, reason and public debate — book *La Laïcité dans le débat de la raison* (2026) and companion platform [laïciScope](#).

## Career

- 2024 — present**    **Professor Emeritus**  
 Université Lumière Lyon 2 — ERIC Research Lab. Continued scientific engagement: doctoral supervision, committees, academic service.
- 2021 — present**    **Co-founder, Lead Designer**  
 PARENE SAS, French-speaking educational platform; already used by several thousand students across Africa.
- 2016 — 2020**    **Director of Digital Affairs**  
 Agence Universitaire de la Francophonie (AUF). Led the **IDNEUF** initiative for the digital transformation of French-speaking universities; modernisation and cloud migration of the agency's infrastructure; deployment of an integrated management software suite.
- 2011 — 2016**    **Director**  
 Institute of Human Sciences (ISH — MSH Lyon / Saint-Étienne); transdisciplinary leadership of more than 3,000 academic staff across some twenty CNRS and university research labs in the Lyon area.
- 1995 — 2005, 2010 — 2011**    **Director**  
 ERIC Research Lab (officially recognised *équipe d'accueil*). Structured the lab's research themes around data mining, big data and machine learning; led national and European projects.
- 1991 — 2024**    **Professor**  
 Université Lumière Lyon 2; previously Associate Professor (1987–1991), Associate Lecturer at Université Claude Bernard Lyon 1 (1984–1987).

## Research

**Topological learning and data mining.** My foundational contributions cover:

- **Induction graphs** — a lattice-based generalisation of decision trees — with a **sample-size-sensitive entropy measure** ( $h_\lambda(f; n)$ ). Software: SIPINA.
- **Asymmetric entropy** for imbalanced classes in supervised learning.
- **Discretisation methods** for continuous attributes (FUSINTER, FISBIN).
- Use of **pretopology** and geometric graphs (Voronoi, Delaunay, Gabriel, relative neighbourhood) to structure neighbourhoods in machine learning.

- A **statistical separability test** based on topological neighbourhoods.
- More recently, analysis of **online social networks** (information diffusion, roles, communities).

**Application areas.** Medicine and epidemiology; humanities and social sciences; textual corpus analysis; infonomics; digital humanities; digital transformation of universities.

#### **Funded research projects (selection).**

- **Erasmus Mundus DMKM Master's** (2010–2016, €4 M, European Commission).
- **Fluresp** (2012–2014, €700,000, DG SANCO, 13 European partners).
- **Infonomics** (2013–2015, €300,000, IDEX University of Lyon).
- **IRF** (2014–2015, €300,000, PALSE).

## **Doctoral Supervision**

More than **20 PhD theses and HDR (Habilitation to Direct Research)** supervised between 1994 and 2018, average duration 3.5 years, almost all fully funded. About **80 Master's theses**. Former doctoral students now hold professorships in France and abroad (Lyon 1, Lyon 2, Saint-Étienne, Brest, Laval (Québec), Beirut, Cameroon), and R&D research or engineering positions in the public and private sectors (Microsoft, Alcatel, ArcelorMittal...).

## **Teaching**

Throughout my career I have taught at all university levels, with a focus on Master's programmes in computer science and statistics. My main teaching areas: **machine learning, data mining, cluster analysis**, databases, algorithmics.

#### **Programmes founded and led.**

- **Erasmus Mundus DMKM Master's** (2010–2016) — co-founder and main coordinator. Consortium of six European universities, English-language curriculum, ~1,000 applications per year from over 150 countries.
- **ECD Master's** (Knowledge Discovery in Databases, 1999–2011) — co-founder, joint accreditation with Université Lyon 2 / Université Paris 11 Orsay / Polytech'Nantes. Still running in evolved form.
- **DESS OPSIE & IIDEE** (1991–1998 and 1990s) — founder. Still running at Lumière Lyon 2.

**Visiting Professor.** York University (Toronto, 1998), Université Laval (Québec, 1998), University of Geneva (2005–2007), University of Tunis (2000–2005), University of Buenos Aires (2013–2015).

## **Academic Service**

#### **Learned societies.**

- **EGC Association** (Extraction et Gestion des Connaissances — Knowledge Extraction and Management) — *co-founder, Vice-President, President*.
- **RNTI Association** (Revue des Nouvelles Technologies de l'Information — Journal of New Information Technologies) — *co-founder, President since 2010*.
- Société Francophone de Classification (SFC — French-speaking Classification Society) — *Vice-President, 2003–2007*.
- International Statistical Institute (ISI), International Association for Statistical Computing (IASC) — *elected member*.

**Conference chairing (selection).** DS-ALT (Lyon, 2012), TopLearn (Paris/Prague/Strasbourg, 2009–2010), MCD@IEEE-ICDM (Houston, Hong Kong, Warsaw, Pisa, 2005–2008), EGC (Montpellier, 2002), ISMIS (Lyon, 2002), PKDD (Lyon, 2000).

**Invited speaker (recent selection).** Rio de Janeiro, Buenos Aires (2013–2015), Naples, Algiers, Portland, Marrakech, São Paulo, Taipei, Berlin, Capri, Neuchâtel.

**Editorial boards.** *Computer Methods and Programs in Biomedicine, IEEE Transactions on SMC, Pattern Recognition Letters, Machine Learning (Guest Ed.), Computational Intelligence (Guest Ed.), Journal of Intelligent Information Systems (Guest Ed.),* and others.

**Grant reviewing.** Italian Ministry of Education, Belgian Scientific Research Fund (FNRS), Czech Science Foundation, AERES (French Higher Education Evaluation Agency), ANR (French National Research Agency), Bpifrance.

## Publications

About **200 publications** (1984–present): 7 books, 22 book chapters, 32 international journal papers, 72 conference papers, 9 edited proceedings. **Full and continuously updated list:** [www.zighed.com/publications](http://www.zighed.com/publications). Academic profiles: [DBLP](#), [HAL](#), [ORCID](#).

### Recent book

- **Zighed, D. A.** (2026). *La Laïcité dans le débat de la raison — Régulation du pluralisme dans la société moderne* [Secularism in the Debate of Reason — Regulating Pluralism in Modern Society]. Companion platform: [laiciscope.org](http://laiciscope.org).

### Top citations (source: OpenAlex)

- Guille, Hacid, Favre, **Zighed** (2013). “Information diffusion in online social networks: a survey”. *SIGMOD Record* 42(2). **845 cit.**
- Muhlenbach, Lallich, **Zighed** (2004). “Identifying and Handling Mislabeled Instances”. *J. Intell. Inf. Syst.* 22(1). **136 cit.**
- **Zighed**, Rabaséda, Rakotomalala (1998). “FUSINTER: A Method for Discretization of Continuous Attributes”. *IJUFKS* 6(3). **69 cit.**
- **Zighed**, Komorowski, Zytkow (eds.) (2000). *Principles of Data Mining and Knowledge Discovery (PKDD 2000)*, Springer LNAI 1910. **60 cit.**
- Forestier, Stavrianou, Velcin, **Zighed** (2012). “Roles in social networks: methodologies and research issues”. *Web Intelligence and Agent Systems* 10(1). **42 cit.**
- Marcellin, **Zighed**, Ritschard (2006). “An asymmetric entropy measure for decision trees”. *Proc. IPMU*. **23 cit.**

### Edited books (selection)

- Guillet, Ritschard, **Zighed**, Briand (eds., 2010). *Advances in Knowledge Discovery and Management*, Springer.
- Brissaud, Lamure et al. (**Zighed** co-author, 2011). *Basics of Pretopology*. Hermann.
- **Zighed**, Rakotomalala (2000). *Graphes d'induction — apprentissage et data mining* [Induction Graphs — Learning and Data Mining]. Hermes.

## Additional Information

**Private consulting.** LUNDBECK (Paris), L'ORÉAL (Paris), ALTARES (Paris), NOVARTIS (Basel), SANOFI PASTEUR (Lyon).

**Languages.** French (working language), English, Arabic.

**Interests.** Classical music and opera; walking; travel; history and literature; reflection on the relationship between scientific knowledge and public debate.

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