

# CURRICULUM VITAE

## GENERAL INFORMATION

### KACEM Imed

French Citizen, born on 1976,  
Distinguished Professor in Computer Science, Exceptional Class,  
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### (A) Qualifications and Functions

He received the Diploma of "INGENIEUR" from the ENSAIT (French "Grande Ecole"), and his M.S. degree from the University of Lille 1, France, both in 2000 (ranked 1<sup>st</sup> in the two diplomas), as well as his Ph.D degree in control and computer science (flexible job-shop scheduling) from the Ecole Centrale de Lille (French "Grande Ecole") at the LAIL (LAGIS now) UMR CNRS. He obtained the HDR degree (Habilitation to supervise doctoral research) from the University of Paris-Dauphine in 2007 in Computer Science (Combinatorial Optimization).

From 2003 to 2009, he was Associate Professor with the University of Technology of Troyes (UTT, France) at the ICD Laboratory of the CNRS. During the year 2007/2008 he was with the National Scientific Research Centre (CNRS, France). Since 2009, he is Full Professor at the University Paul Verlaine – Metz (which is a part of the Université de Lorraine since 2012, France) in the Computer Science Department. In 2018, he was promoted at the Exceptional Class of the professors.

He is the Founder and the Director of LCOMS Laboratory of the Université de Lorraine for the contract 2013-2017 and 2018-2022 (LCOMS is the Laboratory of Design, Optimization and Modelling of Systems) after being the Director of the Computer Science Department (2010-2019) at the same university.

### (B) Main Contributions

His scientific activity is in a transversal and interdisciplinary domain: the Operational Research. More precisely, his contributions are related to the design of exact and approximate algorithms with a guaranteed performance for the NP-hard combinatorial problems. Such problems are mainly related to the combinatorial optimization theory and artificial intelligence. The applications are interdisciplinary and various (green routing and production, packing in electronic design, healthcare, scheduling and transportation, information visualization in big-data...). In these activities, he elaborated several new algorithms and approaches with the best guaranteed performance for several fundamental scheduling problems. These contributions have been published in top journals (*Algorithmica*, *Theoretical Computer Science*, *Discrete Applied Mathematics*, *Discrete Optimization*, *Journal of Combinatorial Optimization*, *Journal of Scheduling*, *Annals of Operations Research*, *Applied Mathematics and Computation*, *Journal of Industrial and Management Optimization*, *Information Sciences*, *Computers & Industrial Engineering*, *RAIRO-Operations Research*, *Soft Computing*, *IJPE*, *EJOR*, *4OR*, *IJCIM*, *IJOR*, *IEEE/SMC Transactions*, *Computers & OR*,...).

He obtained the « Great Award of Research 2010 » from the Universities of Lorraine, the « 3<sup>rd</sup> Robert Faure Award 2009 » from the French Society of Operational Research, the 2015 Steffan Schwarz Award (Best Paper Award of the European Conference ECEC'2015), the Best Paper Award of the IEEE/CODIT'2018 and he has regularly the PEDR or the PES Premium (with the highest level A) since 2006.

He was a Visiting Professor at Southern California University (USA) in October 2011 and the University of Saarlands in December 2015 and December 2016.

He is teaching since 2000 in different universities: Lille University, Troyes University of Technology and University of Lorraine. During the last 20 years, Prof Kacem has been responsible for many teaching programs and courses in many topics, strongly related to his expertise (approximation algorithms, Artificial Intelligence and Soft Computing, Scheduling, Software programming, Combinatorial Optimization,...). He edited several chapters/book on these topics and he is actually supervising the Master's degree OPAL (on Optimization and Algorithms). This Master's degree is a common program, launched by the University of Lorraine and CentraleSupélec on its campus of Metz, and it is very successful in attracting regularly excellent students every year from these institutions and outside.

**(C) National and international visibility (awards and distinctions, editorial boards, scientific councils, invitations from foreign universities, national and international committees...)**

Awards and distinctions

- 3<sup>rd</sup> 2009 ROBERT FAURE Award attributed by the French Society of Operational Research and Decision Aid,
- 2010 Lorraine Universities Great Award of Research,
- Best Paper Award of the IEEE/CODIT'2018, Greece,
- Delegation at CNRS (French National Scientific Research Centre) over the period 2007/2008,
- Premium of the P.E.D.R (October 2006 to September 2010).  
*P.E.D.R or P.E.S is a selective premium attributed by the Ministry to researchers who have an high scientific level and a recognized quality of the PhD theses they supervised.*
- Premium of the P.E.S with the highest level (A) (October 2010 to September 2014)
- Premium of the P.E.D.R with the highest level (A) (October 2014 to September 2018)
- Premium of the P.E.D.R with the highest level (A) (October 2018 to September 2022)
- Nomination as a Member of the CNU (section 27, collegium of professors) from November 2011 to November 2015.
- Steffan Schwarz 2015 Award: Best Paper Award of the European Conference ECEC'2015.

Editorial Duties

- Guest Editor for: Annals of Operations Research (Special Issue on Combinatorial Optimization, published in 2021),
- Guest Editor for: Annals of Operations Research (Special Issue on Multiobjective Optimization, published in 2021),
- Area Editor for: Computers & Industrial Engineering (ELSEVIER, impact factor > 7) since 2008.
- Guest Editor for Computers & Industrial Engineering (Special issue on Combinatorial Optimization, Elsevier, 2009-2011),
- Guest Editor for Computers & Industrial Engineering (Special issue on Optimization Techniques, Elsevier, 2015-2017),
- Area Editor (on Graphs and Scheduling) for RAIRO-Operations Research (CAMBRIDGE Journals) since 2022.
- Associate Editor for RAIRO-Operations Research (CAMBRIDGE Journals) 2016-2022.
- Guest Editor for RAIRO-Operations Research (Special issue on Advances in OR, CAMBRIDGE Journals, 2015-2016),
- Guest Editor for RAIRO-Operations Research (Special Issue on Applied Optimization, 2017-2018),
- Department Editor for: Decision Analytics (ELSEVIER) since 2021.
- Associate Editor for: European Journal of Industrial Engineering (INDERSCIENCE, impact factor=1,5) since 2007.
- Guest Editor for Journal of Systems Science and Systems Engineering (SPRINGER, 2008), European Journal of Industrial Engineering (Inderscience, 2008 and 2010), International Journal of Advanced Operations Management (Inderscience, 2009 and 2011), International Journal of Applied Metaheuristic Computing (IGI, 2011), International Journal of Business Performance and Supply Chain Management (Inderscience, 2011), International Journal of Mathematics in Operational Research (Inderscience, 2012).
- Co-Chair of the International Program Committees of IEEE/CIE'39 (France, 2009), IEEE/CoDIT'16 (Malta, 2016), CIE'41 (USA, California, 2011), CIE'45 (France, 2015), ROADEF2017 (France, 2017), MOPGP2017 (France, 2017), IESM2019 (Hong Kong, 2019), IEEE/CODIT2019 (France, 2019).
- International Program or Organization Committee Member of conferences: ROADEF2021, CIE50, ROADEF2019, ICCGI2019, TORS2019, ICINCO2019, ISCO2018, ROADEF2018, ICCGI2018, TORS2018, ICINCO2017, ROADEF2017, IEEE/CASE2016, ISCO2016, ICSIBO2016, DMBM2016, ROADEF2016, FLINS2016, ROADEF2015, ROADEF2014, IESM2015, META2018, META2016, META2014, CIE47, CIE46, CIE45, CIE44, CODIT18, CODIT17, CODIT16, ECEC'2017, ECEC'2015, CODIT14, CODIT13, ICORES2013, ICNSC2013, IESM2013, ROADEF2013, WorldCIST'2013, FUBUTEC2013, ECEC'2013, ISC'2013, SCET2013, ROADEF2012, SCET2012, ICORES2012, IEEE/CIE41, ICIST2012, PALS2011, ROADEF2011, IESM2011, IEEE/CET2011, FUBUTEC2011, ISC2011, ICIST2011, ECEC2011, IEEE/CIE'40, IFAC/LSS2010, ICMIS 2010, ICMWT2010, MMR2010, IEEE/CIE'39,IMACS/CESA09, ECEC'2009, IEEE/ICSSSM08, IEEE/ICSSSM06, WAC/ISIAC06, IMS'2004, IEEE CEC2007, IEEE CEC2006....
- Member of the Editorial Board for several journals (Advances in OR, EJIE, IJAOM, IJPS, IJAMC, American J. of Alg. Res., JCOPI, JSSM...).

Scientific Councils

- External Member of the Scientific Council of the GDR-RO (French CNRS Research Group on Operational Research) from 2014 to 2020.
- External Member of the Scientific Council of the EPMI (French High School) from December 2012 to 2020.

- External Member of the Scientific Council of the ENSAIT (French High School) since September 2010.
- Member of the Council of the Scientific Pole AM2I (Université de Lorraine) since January 2012.

#### Mobility programs, invitations from foreign universities and invited tutorials and keynote speeches

- *Tutorial at the JPOC'11* (French Days on Combinatorial Optimization and Polyedra, France, June 2019).
- *Tutorial at the ROADEF2018* (French Congress on Operational Research, France, February 2018).
- *Plenary Speaker at the AFROS2018* (IFORS African Congress on Operational Research, Tunisia, July 2018).
- *Plenary Speaker at the META2018* (International Congress on Metaheuristics, Morocco, October 2018).
- *Visiting Researcher*, University of Saarlands (GERMANY), December 2016 and December 2015.
- *Visiting Researcher*, University of Southern California (USA), October 2011.
- *Amadeus Mobility Program (France-Austria)*, University of Graz (AUSTRIA), 4 weeks between 2011 and 2013.
- *Keynote Speaker* for IEEE/CIE40, Japon (2010).
- *Keynote Speaker* for FUBUTEC2011, United Kingdom (2011).
- *Keynote Speaker* for IEEE/CoDIT2013, Tunisia (2013).
- *Keynote Speaker* for IEEE/SCS2013, France (2013).
- *Keynote Speaker* for FP7-EYE Summer Science Incubator School, France (August 2014).
- *Tutorial at the EJC 2015* (Summer School of Young Researchers of GDR RO, France, 2015).
- *Plenary Speaker for DASA2016*, Tunisia (2016).
- *Keynote Speaker for AMATH'16*, Switzerland (2016).
- *Keynote Speaker for CIE46*, China (2016).
- *Keynote Speaker for IEEE/CoDIT2017*, Spain (2017).
- *Keynote Speaker for META2018*, Morocco (2018).
- *Keynote Speaker for FIM04 and FIM08*, Tunisia.

#### National and International Committees

- Nominated Member of the French National Council of the Universities 2011-2015 (CNU27, Section: Computer Science, Collegium of professors)
- Expert for ANR (National Agency of Research, France), ANRT (Association Nationale de Recherche et Technologie, France), NOW (Netherlands), FNRS (Belgium), FQRNT (Canada), NOW (Netherlands).
- Expert since 2018 for the CIIME Committee for accelerating the development of companies in the Région Grans EST.
- President of the HCERES evaluation committee of the DISP laboratory from Lyon University (March 2020).
- Member of the HCERES evaluation committee of the LIAS laboratory from Poitiers University (November 2021).
- Jury Member for more than 115 Ph.D or HDR thesis defences mainly in France (51 times as Rapporteur, 15 times as President, 33 times as Examiner and 16 times as Supervisor).
- Member of the Jury of the "2018 Robert Faure Award".
- Member of the Jury of the "2016 ROADEF Young Researcher".

#### **(D) Scientific Animation**

##### Direction of Laboratory

- Head and Founder of the multidisciplinary LCOMS Laboratory of the Université de Lorraine (Contracts 2013-2017 and 2018-2023). This laboratory has about 50 permanent members (in the computer science, control and electronics fields).

##### Animation, Doctoral Supervision and Research Groups

- Supervisor of 17 PhD students: 8 of them are now Assistant Professors in France or in foreign countries (Y. Abdelsadek, A. Bekrar, N. Souayah, A. Souissi, Y. Benziani, M. Seifaddini, M.A Hassan, G. Alhadi), 6 are now Post-Doc (S. Minich, Th. Nazé, P. Schroeder, F. Abdallah, M. Rebai, A. Kadri) and the other students are continuing their research under my supervision (Y. Makhoulouf, B. Djahel, I. Assayakh).
- Coordinator of the French National Research group on Scheduling Theory and Applications « GOTHA » (sponsored by the group GDR-Operational Research of the CNRS) since 2014.
- In charge of the Master Degree (Research Field, 2<sup>nd</sup> year) in Computer Science since 2011 (Université de Lorraine).
- Past Duties:

- Coordinator of the Pole « Operational Problems in OR » (one part of the group GDR-Operational Research of the CNRS) 2016-2020 (I succeeded to Jacques Carlier).
- Member of the “DFD Computer Science” (Office of the Computer Science Department at the Doctoral School IAEM Lorraine) 2009-2014.
- Coordinator of the French National Research group « KnapSack and Optimization » (sponsored by the group GDR-Operational Research of the CNRS), 2008-2013.
- Member of the Doctoral School Council 2007-2009 (UTT).
- In charge of the ICOS topic of C.P.E.R (“Contrat Plan Etat/Région”) 2008-2009 (at the Région Champagne-Ardenne for the UTT).

#### Organization of conferences and events

- General Conference Chair or Program/Organization Chairman of:
  - IEEE/IESM2019 (300 participants): <http://gdba.dhuiec.com/iesm2019/>
  - IEEE/CODIT2019 (300 participants): <http://www.codit19.com>
  - JPOC2019 (60 participants) : <https://jpoc11.event.univ-lorraine.fr>
  - ROADEF2017 (400 participants): <http://roadef2017.event.univ-lorraine.fr/>
  - MOPGP2017 (60 participants): <http://mopgp.org/>
  - CIE'45 (200 participants): <http://cie45.event.univ-lorraine.fr/>
  - IEEE/CoDIT'14 (150 participants): <http://codit2014.event.univ-lorraine.fr/>
  - IEEE/CIE'39 (350 participants): <http://www3.utt.fr/cie39/index.htm>
  - IEEE/ICSSM06 (250 participants): <http://www3.utt.fr/icssm06/>
- Organizer of the first GDR-RO summer school of young researchers (EJC GDR-RO 2015) sponsored by the GDR-RO (Metz, 2-4 September 2015). This workshop is devoted to Combinatorial Optimization: <http://ejc-gdr-ro.event.univ-lorraine.fr/>
- Organizer of the 2014 Lab Surfing Workshop of the FET-EYE FP7 Project sponsored by the European Commission (Milan, Italy, May 2014). This workshop is devoted to the bright European Young Researchers. The objective is to meet with these young researchers and to coach them in order to prepare high-breaking interdisciplinary projects for excellence for the H2020 call-for-projects: <http://fet-eye.eu/milan-may-2014>
- Organizer of the 2014 Summer Science Incubator Workshop of the FET-EYE FP7 Project sponsored by the European Commission (Metz, France, August 2014): <https://fet-eye.eu/siss-2014>
- Organizer of the 2010 Summer School of GreatRoad group sponsored by Ugr (Université Grande Région).
- Organizer of the LCOMS Day devoted every year to the presentation of new trends on interdisciplinary applications of ICT (Université de Lorraine, 2013, 2014, 2015, 2016).
- Organizer of the WAC/ISIAC06 in 2006 (Special Track of the WAC Congress, 50 participants).
- Chair of several sessions and special sessions (IEEE/SMC02, ROADEF 2006, PENTOM 2009, IMS 2004, CESA 2006, MOSIM'08, IEEE/ICSSM06, IEEE/CIE39, LSS 2010, IESM'2011, ROADEF2011, ROADEF2012, IESM2013, IEEE/ICNSC2013, IEEE/Cloudnet2014, ROADEF2014, IEEE/CODIT14, IEEE/CODIT16, ROADEF2015, ROADEF2016, ROADEF2017, IEEE/CODI17, ROADEF2018, ROADEF2019, ROADEF2020, ROADEF2021).

#### Direction and management of projects

- Coordination of recent projects:
  - French coordinator of the **European INTERREG Project “PRODPILOT”**. The topic of this project is related to the performance optimization for the Great Region production enterprises. The period is 2018-2022 and the project involves the universities of Lorraine, Luxembourg, Saarland, Liège, the regional chambers of commerce and other institutions (Département de la Moselle, ED-MEDIA, ISEETECH). The global budget for all the partners is around 2M€. For the Université de Lorraine, the operation will induce a total budget of > 440 K€.
  - Scientific Responsible of the “Approximation Algorithms for Combinatorial Optimization with Uncertain Data” WorkPackage/Thesis in the **ANR LOR-AI Project**. The ANR is the French National Agency of Research and their call-for-projects are highly selective. This project is organized from 2020 to 2024. For the LCOMS, the operation will induce a total budget of 110 K€ (50% by the ANR and 50% by proper funds).

- Coordinator of the project « **LUE-Prof@Lorraine Approximation & Scheduling** » funded by the **ISITE LUE**, which gives us the opportunity to invite Prof. Hans Kellerer (University of Graz) as “Prof@Lorraine” for 4 years (one month per year) and to support our common research. The aim of this project is to design efficient approximation algorithms for some hard scheduling problems.
- Coordinator of the **Regional Project “Pagnation”**. The topic of this project is related to the scheduling of interrelated jobs (i.e., jobs having some parts allowed to overlap) on parallel-machines and the related applications in high-performance computing. The project allows to funding the PhD thesis of Théo NAZE (2017-2020). The global budget is around 92 K€ (50% by the Région Grand-Est and 50% by proper funds).
- Coordination of past projects:
  - Regional Coordinator of the **European Project FP7-EYE** (in the Future Emerging Technology domain). I was also the responsible of the French part and of an important WorkPackage in this project. The topic of this project is related to the ICT and their interdisciplinary and high-breaking applications. The project involved 13 European partners (2013-2015). The global budget for all the partners is around 1.3 M€.
  - Scientific Responsible of the Information Visualization WorkPackage in the **ANR INFO-RSN Project**. The ANR is the French National Agency of Research and their call-for-projects are highly selective. The ANR INFO-RSN Project belongs to the *Innovative Societies* Cluster. This project is interdisciplinary (involving the LCOMS and the CREM laboratories) on the information circulation in the social networks (like TWITTER) and the visualization and the extraction of the information from the big-data of these social networks. Three partners are involved (2014-2016). The global budget for all the partners is 300 K€.
  - Coordinator of the project « **Chercheur d’Excellence 2013** » funded by the Région Lorraine, which gives us the opportunity to invite Prof. Hans Kellerer (University of Graz) as “Chercheur d’Excellence”. The aim of this project is to design efficient approximation algorithms for some hard scheduling problems.
  - SP2UPDID Project (Amadeus Austrian/French Project, Mobility Program, French Coordinator with Prof. Hans Kellerer for the Austrian part, 2011-2012),
  - APDO (funded by the CNRS/GDR RO, 2012-2013 in collaboration with Prof. Vangelis Paschos of the LAMSADE/IUF),
  - OCIDI (Regional Project for Young Researchers funded by the Regional Council of Champagne-Ardenne – CRCA, 2006-2009),
  - APPROXIM (Austrian/French Collaborative Project funded by CRCA, 2008-2010),
  - OCIDI (supported also by CNRS by allowing one year of delegation and funded also by CRCA by allowing a PhD thesis),
  - OP2D (Project funded by the CRCA by funding a PhD thesis and a post-doc, 2004-2007),
  - AIPC-RVRD (funded by CNRS/GDR RO, 2007-2009, with Prof. Mhand Hifi, an extension of this project « LMD » has been funded by the ADEME),
  - Consulting activities with Newton Vaureal Consulting - Paris...

## PERSONAL BIBLIOGRAPHY

### Articles (international journals)

- 1) Kacem, I., Lucarelli, G. & Nazé, T. Exact algorithms for scheduling programs with shared tasks. *Journal of Combinatorial Optimization (SPRINGER)* (2022). <https://doi.org/10.1007/s10878-021-00702-8>
- 2) A. Grange, I. Kacem, S. Martin, S. Minich. Fully Polynomial Time Approximation Scheme for the Pagnation Problem with hierarchical structure of tiles. *RAIRO-Operations Research* (2021, accepted).
- 3) I. Kacem, H. Kellerer. Complexity Results for Common Due Date Scheduling Problems with Interval Data and Minmax Regret Criterion. *Discrete Applied Mathematics (ELSEVIER)*, Volume 264, 15 July 2019, Pages 76-89, <https://doi.org/10.1016/j.dam.2018.09.026>
- 4) G. Al-Hadi, I. Kacem, P. Laroche, M. Osman. Approximation Algorithms for Minimizing the Maximum Lateness and Makespan on Parallel Machines, *Annals of Operations Research (SPRINGER)*, 2019, <https://doi.org/10.1007/s10479-019-03250-x>
- 5) Y. Abdelsadek, I. Kacem. Productivity improvement based on a decision support tool for optimization of constrained delivery problem with time windows. *Computers & Industrial Engineering (ELSEVIER)*, 15 December 2021, <https://doi.org/10.1016/j.cie.2021.107876>
- 6) P. Schroeder, I. Kacem. Competitive difference analysis of the cash management problem with uncertain demands. *European Journal of Operational Research*, 283 (2020) 1183–1192, <https://doi.org/10.1016/j.ejor.2019.11.065>.

- 7) M-N. Azaiez, A. Gharbi, I. Kacem, Y. Makhlof, M. Masmoudi, Two-stage no-wait hybrid flow shop with inter-stage flexibility for operating room scheduling. *Computers & Industrial Engineering* (ELSEVIER), accepted 2022, <https://doi.org/10.1016/j.cie.2022.108040>
- 8) P. Schroeder, I. Kacem. Optimal solutions for conversion problems with interrelated prices. *Operational Research* (SPRINGER), 2020, <https://doi.org/10.1007/s12351-020-00548-8>
- 9) P. Schroeder, I. Kacem, G. Schmidt. Optimal online algorithms for the portfolio selection problem, bi-directional trading and -search with interrelated prices. *RAIRO-Operations Research*. 53 (2), 559-576, 2019, <https://doi.org/10.1051/ro/2018064>
- 10) A. Kadri, I. Kacem, K. Labadi. Lower and upper bounds for scheduling multiple balancing vehicles in bicycle-sharing systems. *Soft Computing* (SPRINGER), 2018, DOI: 10.1007/s00500-018-3258-y July 2019, Volume 23, Issue 14, pp 5945–5966.
- 11) P. Schroeder, I. Kacem. Optimal cash management with uncertain, interrelated and bounded demands. *Computers & Industrial Engineering* (ELSEVIER), 2019, <https://doi.org/10.1016/j.cie.2019.04.052>
- 12) F. Abdallah, C. Tanougast, I. Kacem, C. Diou, D. Singer. Genetic algorithms for scheduling in a CPU/FPGA architecture with heterogeneous communication delays. *Computers & Industrial Engineering* (ELSEVIER), 2019, <https://doi.org/10.1016/j.cie.2019.106006>
- 13) I. Kacem, H. Kellerer. Approximation Schemes for Minimizing the Maximum Lateness on a Single Machine with Release Times under Non-Availability or Deadline Constraints. *Algorithmica* (SPRINGER), 80(12): 3825–3843, 2018, <https://doi.org/10.1007/s00453-018-0417-6>.
- 14) M-A. Hassan, I. Kacem, S. Martin, I.M. Osman. On the m-clique free interval subgraphs polytope: polyhedral analysis and applications. *Journal of Combinatorial Optimization* (SPRINGER), 36(3): 1074–1101, 2018, <https://doi.org/10.1007/s10878-018-0291-9>
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- 16) A. Grange, I. Kacem, S. Martin. Algorithms for the Bin Packing Problem with Overlapping Items *Computers & Industrial Engineering*. *Computers & Industrial Engineering* (ELSEVIER), 115: 331-341 (2018).
- 17) Y.E. E. Ahmed, K.H. Adjallah, R. Stock, I. Kacem, S.F. Babiker. NDSC based Methods for Maximizing the Lifespan of Randomly Deployed Wireless Sensor Networks for Infrastructures Monitoring. *Computers & Industrial Engineering* (ELSEVIER), Vol 115: pp17-25 (2018).
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- 19) I. Kacem, M. Sahnoune, G. Schmidt. Strongly Fully Polynomial Time Approximation Scheme for the Weighted Completion Time Minimisation Problem on Two-Parallel Capacitated Machines. *RAIRO - Operations Research*, 51 (2017) 1177–1188.
- 20) I. Kacem, H. Kellerer. Semi-online scheduling on a single machine with unexpected breakdown. *Theoretical Computer Science* (ELSEVIER), 2016, 646: 40-48.
- 21) I. Kacem, H. Kellerer, M. Seifaddini. Efficient Approximation Schemes for the Maximum Delivery Time Minimization on a Single Machine with a Fixed Operator or Machine Non-Availability Interval. *Journal of Combinatorial Optimization* (SPRINGER), 2016, 32(3): 970-981.
- 22) I. Kacem, E. Levner. An Improved Approximation Scheme for Scheduling a Maintenance and Under Linear Deteriorating Jobs. *Journal of Industrial and Management Optimization* (WoS, IF=0.84), 2016, Volume 12, Number 3, pp: 811 – 817.
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- 25) Y. Abdelsadek, F. Herrmann, I. Kacem, B. Otjacques. Branch-and-bound algorithm for the maximum triangle packing problem. *Computers & Industrial Engineering* (ELSEVIER) 81: 147-157 (2015)
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- 35) R. Nessah, I. Kacem. Branch-and-bound method for minimizing the weighted completion time scheduling problem on a single machine with release dates. *Computers & Operations Research (ELSEVIER)*, 2012, 39:3, 471-478.
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### **Tutorials and Keynote Speeches:**

- 1) I. Kacem. Tutoriel sur l'ordonnancement et l'approximation. *11ème Journées des Polyèdres et Optimisation Combinatoire JPOC'11*, 24-28 juin 2019, Metz, France. [\[Tutoriel\]](#)
- 2) I. Kacem. Schémas d'approximation polynomiale : quand les techniques classiques deviennent incontournables. *19ème Congrès Annuel de la ROADEF, ROADEF2018*, 21-23 février 2018, Lorient, France. [\[Tutoriel\]](#)
- 3) I. Kacem. Tutorial on Scheduling Problems. *7th International Conference on Metaheuristics and Nature Inspired Computing META'18*, 27-31 October 2018, Marrakech, Morocco. [\[Tutoriel\]](#)
- 4) I. Kacem. Scheduling between theory and application. The 2018 International Conference of the African Federation of Operational Research Societies. Tunis, Tunisia, 2-4, July 2018. [\[Plenary Speech\]](#).
- 5) I. Kacem. Scheduling with Non-Availability Constraints: Offline and Semi-Online Scenarios. *IEEE CoDIT2017, International Conference on Control, Decision and Information Technologies*, Barcelona, Spain, April 2017. [\[Keynote Speech\]](#)
- 6) I. Kacem. Scheduling with Non-Availability Constraints: Offline and Semi-Online Scenarios. *21th International Conference on Applied Mathematics (AMATH'16), Bern, Switzerland*, December 17-19, 2016. [\[Keynote Speech\]](#)
- 7) I. Kacem. Advanced Techniques for Combinatorial Optimization Problems. *International Conference on Computers and Industrial Engineering*, Tianjin, China, 29-31 October 2016. [\[Keynote Speech\]](#)
- 8) I. Kacem. Approximation Techniques for Hard Combinatorial Optimization Problems. *DASA'2015*, July 18-20, 2015, Tunisia, [\[Tutoriel\]](#).
- 9) I. Kacem. Scheduling Theory and Polynomial-Time Approximation Techniques. *Ecole des Jeunes Chercheurs du GDR RO (EJC'2015)*, September 2-4, 2015, Metz, France, [\[Tutoriel\]](#).
- 10) I. Kacem. **Scheduling Function for Optimization in Industrial Systems and New Technologies.** *FP7-EYE Science Incubator summer school*, 18-23 August, 2014, Metz, France [\[keynote speech\]](#).
- 11) I. Kacem. Effective Algorithms for Scheduling Problems Under Non-Availability Constraints. *IEEE International Conference on Systems and Computer Science*, August 26-27, 2013, Villeneuve d'Ascq, France, 162-169 [\[keynote speech\]](#).
- 12) I. Kacem. Approximation Techniques for Hard Combinatorial Optimization Problems. *IEEE CoDIT2013, International Conference on Control, Decision and Information Technologies*, Tunisia, May 2013. [\[Keynote Speech\]](#)
- 13) I. Kacem and V. Paschos. Weighted Completion Time Minimization on a Single-Machine with a Fixed Non-Availability Interval: Differential Approximability. *New Challenges in Scheduling Theory 2012*, Fréjus, 21-27 October 2012. [\[Invited Talk\]](#)
- 14) I. Kacem. Simulation approaches for optimization in business and service systems. *FUBUTEC 2011, Future Business Technology*, April 18-20, 2011, British Institute of Technology and Ecommerce, London, UK. [\[Keynote Speech\]](#)
- 15) I. Kacem. **Scheduling function for management and optimization in production and service systems.** *IEEE/CIE'40*, July 25-28, 2010, Awaji Island, Japan. [\[Keynote Speech\]](#)
- 16) I. Kacem. Minimisation de la plus grande date de livraison sur une seule machine avec une contrainte d'indisponibilité. *FIM08*, 15-16 avril 2008, Tunis, Tunisie. [\[Keynote Speech\]](#)
- 17) I. Kacem. Ordonnancement et gestion des activités de maintenance. *FIM04*, 14 avril 2004, Tunis, Tunisie. [\[Keynote Speech\]](#)

### **Edition of Conference Proceedings:**

- 1) M. Dessouky, I. Kacem, Proceedings of the 2015 International Conference on Computers & Industrial Engineering (CIE45, October 28-30, 2015, Metz, France). ISSN: 2164-8670. <http://cie45.event.univ-lorraine.fr/>
- 2) I. Kacem, P. Laroche, Z. Roka. Proceedings of the 2014 International Conference on Control, Decision and Information Technologies (CODIT'14, November 3-5, 2014, Metz, France). ISBN: 978-1-4799-6773-5. Available at: <http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=6982036>
- 3) I. Kacem, Proceedings of the 2009 International Conference on Computers & Industrial Engineering (IEEE/CIE39, July 6-8, 2009, Troyes, France). ISBN: 978-1-4244-4135-8 ©2009 IEEE. Available at: <http://ieeexplore.ieee.org/xpl/tocresult.jsp?reload=true&isnumber=5223483&isYear=2009>
- 4) C. Chu, I. Kacem, Proceedings of the 2006 International Conference on Service Systems and Service Management (IEEE/ICSSSM'06, October 25-27, 2006, Troyes, France). ISBN: 1-4244-0450-9 ©2006 IEEE. Available at:



### **Edition of Special Issues:**

- 1) I. Kacem, D. La Torre, H. Masri. Special Issue on "Recent advances in multiple objective optimization and goal programming". *Annals of Operations Research* (SPRINGER), 296(1): 1-5 (2021).
- 2) I. Kacem, H. Kellerer, R. Mahjoub. Special Issue on "New trends on combinatorial optimization for network and logistical applications". *Annals of Operations Research* (SPRINGER), 298(1): 1-5 (2021).
- 3) R. Dou, C-F. Chien, I. Kacem, C-Y. Hsu. Industry Applications of Computational Intelligence: Preface. *International Journal of Computational Intelligence Systems* (Atlantis Press) 11(1): 803-804 (2018)
- 4) I. Kacem. Special Issue on "[Applications of Optimization Methods to Industrial Engineering Problems](#)". *Computers and Industrial Engineering* (ELSEVIER), 112C (2017) pp. 466-467.
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- 9) I. Kacem, C. Chu. *Special Issue* on Discrete Optimization. *European Journal of Industrial Engineering*, vol 2, n°2, 2008.
- 10) C. Chu, I. Kacem, *Special Issue: New trends on service systems and service management*. *Journal of Systems Science and Systems Engineering*, Springer Verlag, vol 17, N° 2 / juin 2008.
- 11) I. Kacem. *Special Issue: New Trends on Metaheuristics and their Applications*. *International Journal of Applied Metaheuristic Computing* (IGI), vol 2, n°1, 2011.
- 12) M. Hifi, I. Kacem, A.R. Mahjoub. *Special Issue: Polyhedra & Combinatorial Optimization*. *International Journal of Mathematics in Operational Research*, vol 4, n°3, 2012.
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### **Chapters of books:**

- 1) I. Kacem. Genetic algorithms for solving flexible job-shop scheduling problems. In "Metaheuristics for Production Scheduling" edited by B. Jarboui, P. Siarry and J. Thegem, pp 19-44, May 2013, Wiley-ISTE.
- 2) I. Kacem, H. Kellerer, V. Strusevich. Single Machine Scheduling with a Common Due Date: Total Weighted Tardiness Problems. In "Progress in Combinatorial Optimization" edited by A.R. Mahjoub 2011, London, United Kingdom, John Wiley & Sons.
- 3) I. Kacem. Scheduling under unavailability constraints to minimize flowtime criteria. In "Multiprocessor Scheduling: Theory and Applications" (Edited by E. Levner). ISBN 978-3-902613-02-8, ARS Publishing, 2007.
- 4) I. Kacem. Modelling flexible job shop scheduling problems. In "Encyclopedia of Information Science and Technology". Idea Group Publishing, 2005, USA.
- 5) I. Kacem, P. Borne. Fuzzy Hybrid Method for Evaluating Schedule Performance in Flexible Job-Shop. In "Intelligent Sensory Evaluation: Methodologies and Applications", pp 137-154. Springer Verlag, 2004.
- 6) I. Kacem, S. Hammadi, P. Borne. Flexible Job-shop Scheduling Problems: Formulation, Lower-bounds, Encodings, and Controlled Evolutionary Approach. In "Computational Intelligence in Control", pp 233-261, Idea Group Publishing, USA, 2002.
- 7) I. Kacem, S. Hammadi, P. Borne. Fuzzy Evolutionary Approach for Multi-objective Combinatorial Optimization: Application to Scheduling Problems. In "Fuzzy Sets-based Heuristics for Optimization", Springer Verlag, 2003.

## TEACHING ACTIVITIES IN THE LAST 5 YEARS

### IN FRANCE (In home institution: Université de Lorraine)

My teaching activities cover several topics in Computer Science (Algorithms, Artificial Intelligence, Scheduling, Programming, Industrial Informatics, Combinatorial Optimization...). My courses have been presented to students in the 2<sup>nd</sup> year of the Master Degree (Research Option), in engineering schools (levels Bac+3, Bac+4 or Bac+5) and to student in the the BSc degree (Bac+1, Bac+2 and Bac+3). My teaching activities have been carried out at the Université de Lorraine as a Professor. In the past, I did my teaching activities at the UTT as an Assistant Professor and at the Université de Lille 1 as a Lecturer.

The following table indicates the volumes of these activities (in hour equivalent TD or HTD) during the 5 years at my university (from 2012 to 2017). The annual volumes are generally similar and limited to 242 HTD as I have regularly the P.E.S or the P.E.D.R Premium since 2006. The following table provides the information on my teaching activities in Computer Science and gives the level of the students for each unit:

Teaching Unit	Level
Graph Theory	Master 2 Research
Combinatorics and Approximation	Master 2 Research
Scheduling and Applications	Master 1 and Master 2
Discrete Mathematics and Graphs	BSc
Parallel Computing & Algorithmic	Master 2
C language programming	BSc
Decisional Models for Security	Master 2
Advanced Algorithmics	Master 1
Optimization, Artificial Intelligence, and Soft Computing	BSc
Supervision of research trainings	Master 1, Master 2
Supervision of professional trainings	BSc 3, Master 2

## PEDAGOGIC AND ADMINISTRATIVE DUTIES IN THE LAST 5 YEARS

- Director and Founder of the LCOMS laboratory of the Université de Lorraine (2013-2023).
- Responsible of the MSc 2 OPAL (Research Option) « OPTimization and ALgorithms » since September 2011 (Université de Lorraine).
- External Member of the Scientific Council of the EPMI (French High School) from December 2012 to 2020.
- Member of the Council of the Scientific Pole AM2I (Université de Lorraine) 2012-2022.
- External Member of the Scientific Council of the ENSAIT (French “Grande Ecole”) since September 2010.
- External Member of the Scientific Council of the GDR-RO (French CNRS Research Group on Operational Research) 2014-2020.
- Member of the “DFD Computer Science” (Office of the Computer Science Department at the Doctoral School IAEM Lorraine) 2009-2014.
- Nominated Member of the French National Council of the Universities 2011-2015 (CNU27, Section: Computer Science, Collegium of professors)
- Director of the Computer Science Department, UFR MIM Faculty, 2010-2019 (Université de Lorraine).
- Member of several Selection Committees (for recruiting professors and assistant professors).