Recent Advances in Business Computing and Operations Research (RAIBCOR)

WS 2017/2018

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27. Oktober 2017

Agenda

- Rahmenzeitplan
- Grundsätzliches
- Vorstellung der Themenliste
- Diskussion

Grober Zeitplan

- Freitag, 27. Oktober 2017:
  - Vorstellung der Themen
  - Erläuterung des grundsätzlichen Ablaufes
  - Festlegung der Themen und Zuordnung der Betreuer
- Freitag, 29. März 2018: Abgabe der Arbeiten
- April / Mai 2018: Präsentation durch die Seminarteilnehmer
  (Der genaue Präsentationstermin wird in der Anfangszeit des Sommersemesters 2018 bekannt gegeben.)

Formale Grundsätze

- Basisliteratur dient dem Grundverständnis und ist Ausgangspunkt für weitere Literaturrecherche

  Wichtig: Eigene Darstellung und kritische Beurteilung
- Die formalen Regeln zur Erstellung einer Seminararbeit finden Sie auf der Lehrstuhlseite
- Der Vortrag soll eine Dauer von 30 Minuten haben
- Die Seminararbeit umfasst ca. 15 Seiten Text
- Im Mastermodul muss zusätzlich ein Projektteil erstellt werden. Dieser umfasst ca. 5 Seiten

Formale Grundsätze

- Es sind 2 Versionen der Arbeit einzureichen
  - Eine schriftliche Ausarbeitung (in Seminarmappe oder Heftstreifen)
  - Eine digitale Version der Arbeit im PDF-Format

Themenliste – Bachelor

1. **Comparison of Mixed-Model Assembly Line Balancing Objectives** → **BWiWi 8.1 / BWiWi 8.4**
   Lit.: Emde, S.; Boysen, N.; Scholl, A. (2010): Balancing mixed-model assembly lines: A computational evaluation of objectives to smoothen workload. *International Journal of Production Research.* Volume 48, Issue 11, 3173-3191. Bock, S. (2000): Modelle und verteilte Algorithmen zur Planung getakteter Fließlinien: Ansätze zur Unterstützung eines effizienten Mass Customization. Deutscher Universitätsverlag, Wiesbaden.

2. **Single stage scheduling: Solving total tardiness and total weighted tardiness to optimality** → **BWiWi 8.1 / BWiWi 8.4**
   Lit: Pinedo, M.L.: Scheduling: Theory, Algorithms, and Systems. 3rd edition Springer. Chapter 3 (in particular pp.50-54, 57-61)

Themenliste – Bachelor

3. **Branch&Bound strategies – Comparison of alternative approaches and applications** → BWiWi 8.1 /BWiWi 8.4
   Lit.: Pinedo, M.L.: Scheduling: Theory, Algorithms, and Systems. 3rd edition Springer. Cormen, T.H., Leiserson, C.E., Rivest, R.L., Stein, C.: Introduction to Algorithms, MIT Press.

4. **Single-machine scheduling with batch delivery**
   → BWiWi 8.1 / BWiWi 8.4

   Lit: Ahmadizar, Fardin; Farhadi, Soma (2015): Single-machine batch delivery scheduling with job release dates, due windows and earliness, tardiness, holding and delivery costs. Computers & Operations Research, 2015, 53. Jg., S. 194-205.

Themenliste – Bachelor

5. Order acceptance and scheduling decisions

→ BWiWi 8.1 / BWiWi 8.4

Lit: OG, Ceyda, et al. Order acceptance and scheduling decisions in make-to-order systems. International Journal of Production Economics, 2010, 125. Jg., Nr. 1, S. 200-211.

6. Multimodal freight transportation planning

→ BWiWi 8.1 / BWiWi 8.4

Lit: SteadieSeifi, M., et al. "Multimodal freight transportation planning: A literature review." European journal of operational research 233.1 (2014): 1-15.

Themenliste – Bachelor

7. **Facility location and supply chain management**
   → BWiWi 8.1 / BWiWi 8.4
   Lit: Melo, M. Teresa, Stefan Nickel, and Francisco Saldanha-Da-Gama. "Facility location and supply chain management–A review." European journal of operational research 196.2 (2009): 401-412.
8. **Personell scheduling** → BWiWi 8.1 / BWiWi 8.4
   Lit: Van den Bergh, Jorne, et al. „personell scheduling: A literature review.“ European Journal on Operational Research 226.3 (2013): 367-385
9. **Urban transportation network design problems**
   → BWiWi 8.1 / BWiWi 8.4
   Lit.: Farahani, Reza Zanjirani, et al. „A review of urban transportation network design problems.“ European Journal of Operational Research 229.2 (2013): 281-302.

Themenliste – Bachelor

10. **Column Stores vs.Row Store Storage in Relational Databases** → BWiWi 8.1 / BWiWi 8.4
    Lit: Date, Chris J.: An Introduction to Database Systems. 8. Auflage; Addison Wesley Longman Publishing Company; Reading et al; 2004; Appendix A: The Transrelational Model

11. **Managing geo-data (spatial and geodetic) in database systems** → BWiWi 8.1 / BWiWi 8.4
    Lit.: PostGIS: Spatial and Geographic objects for PostgreSQL (http://postgis.net/documentation/)

Themenliste – Master

12. **Multi-tenant database architectures** → MWiWi 6.1 / MWiWi 6.1.6

    Lit.: https://www.codeproject.com/Articles/51334/Multi-Tenants-Database-Architecture/ https://docs.microsoft.com/en-us/azure/sql-database/sql-database-design-patterns-multi-tenancy-saas-applications/ https://www.ibm.com/developerworks/data/library/techarticle/dm-1201dbdesigncloud/index.html

13. **Shapefiles, GeoJSON and more: Using geodata in business applications** → MWiWi 6.1 / MWiWi 6.1.6

    Lit.: ESRI: Shapefile Technical Description; White Paper, 1998 (https://www.esri.com/library/whitepapers/pdfs/shapefile.pdf) ; Internet Engineering Task Force (IETF): The GeoJSON Specification; ISSN: 2070-1721; RFC7946 (https://tools.ietf.org/html/rfc7946)

Themenliste – Master

14. Geodata for information visualization → MWiWi 6.1 / MWiWi 6.1.6

Lit.: Antoni Moore, Igor Drecki: Geospatial Visualisation; Springer Science & Business Media; 2012

15. Using statistical functions in large scale relational databases → MWiWi 6.1 / MWiWi 6.1.6

Lit.: IBM Corporation: https://www.ibm.com/support/knowledgecenter/en/SSEPGG_11.1.0/com.ibm.db2.luw.sql.ref.doc/doc/c0000757.html; 2016

→ vergeben

Themenliste – Master

16. **NoSQL databases vs. Relational Databases with extended data type support: decision criteria, model and process**
    → MWiWi 6.1 / MWiWi 6.1.6

17. **Verwendung von Schablonen im Requirements Engineering** → MWiWi 6.1 / MWiWi 6.1.6
    Lit: Rupp, Chris: Requirements Engineering und –management; Hanser Verlag; 6. Auflage; 2014

18. **Handling time related aspects in databases systems**
    → MWiWi 6.1 / MWiWi 6.1.6
    Lit.: C.J. Date, Hugh Darwen, Nikos Lorentzos (2002). *Temporal Data & the Relational Model, First Edition* (The Morgan Kaufmann Series in Data Management Systems); Morgan Kaufmann; 1st edition; 422 pages. ISBN 1-55860-855-9.

Themenliste – Master

19. Integration of PRINCE2 and agile methods

→ **MWiWi 6.1 / MWiWi 6.1.6**

Lit.: http://www.prince2how2.com/p/prince2-scrum-and-agile.html

20. Natural language based requirements engineering (functional, non-functional and data requirements)

→ **MWiWi 6.1 / MWiWi 6.1.6**

Lit: Andres Arellano et al.: Natural Language Processing of Textual Requirements; ICONS 2015 : The Tenth International Conference on Systems; ISBN: 978-1-61208-399-5

Themenliste – Master

21. **Templating for requirements formulation (user epics, user stories)** → MWiWi 6.1 / MWiWi 6.1.6

    Lit.: Lit: Rupp, Chris: Requirements Engineering und – management; Hanser Verlag; 6. Auflage; 2014

22. **Conflict resolution concepts in stakeholder management**
    → MWiWi 6.1 / MWiWi 6.1.6

    Lit.: Negotiation Journal

Themenliste – Master

23. **An optimization approach for district heating strategic network design** → MWiWi 6.1 / MWiWi 6.1.6
    Lit: Bordin, Chiara, Angelo Gordini, and Daniele Vigo. "An optimization approach for district heating strategic network design." European Journal of Operational Research 252.1 (2016): 296-307.

24. **The Hybrid Electric Vehicle – Traveling Salesman Problem**
    → MWiWi 6.1 / MWiWi 6.1.6
    Lit: Doppstadt, Christian, Achim Koberstein, and Daniele Vigo. "The Hybrid Electric Vehicle–Traveling Salesman Problem." European Journal of Operational Research 253.3 (2016): 825-842.

Themenliste – Master / Doktoranden

25. Ant Colonies in the Multi-Level Capacitated Lot-Sizing Problem → MWiWi 6.3 / MWiWi 6.4.1 / Doktoranden

Lit.: Pitakaso, R. et al. (2006): Combining population-based and exact methods for multi-level capacitated lot-sizing problems. *International Journal of Production Research,* Vol. 44, Issue 22, Pages 4755-4771.

26. Beyond SALOME - A further algorithm for SALBP-1

→ MWiWi 6.3 / MWiWi 6.4.1 / Doktoranden

Lit.: E. C. Sewell, S. H. Jacobson, (2012) A Branch, Bound, and Remember Algorithm for the Simple Assembly Line Balancing Problem. INFORMS Journal on Computing 24(3):433-442.

Themenliste – Master/Doktoranden

27. Robust scheduling → **MWiWi 6.3 / MWiWi 6.4.1 / Doktoranden**

Lit: Pinedo, M.L.: Scheduling: Theory, Algorithms, and Systems. 3rd edition Springer. (Stochastic models and pp. 482-487)

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5. Order acceptance and scheduling decisions
6. Multimodal freight transportation planning
7. Facility location and supply chain management
8. Personell scheduling
9. Urban transportation network design problems

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