

Thomas Schmidt
Mærsk Mc-Kinney Møller Institutet
KI, OUH, Forskningsenhed for CIMT - Center for Innovativ Medicinsk Teknologi
(Odense)
SDU Health Informatics and Technology
E-mail: schmidt@mmmi.sdu.dk
Telefon: +4565507456



Publikationer

Perceptions of Learning Activities in Electronic Health Record Transition

Schmidt, T. & Nøhr, C., 18. maj 2023, *Caring is Sharing - Exploiting the Value in Data for Health and Innovation - Proceedings of MIE 2023: Exploiting the Value in Data for Health and Innovation*. Hägglund, M., Blusi, M., Bonacina, S., Nilsson, L., Cort Madsen, I., Pelayo, S., Moen, A., Benis, A., Lindsköld, L. & Gallos, P. (red.). IOS Press, Bind 302. s. 448-452 (Studies in health technology and informatics, Bind 302).

Facilitating HIE in Denmark: the story of MedCom, a Danish health information organization

Dixon, B. E., Schmidt, T. & Nøhr, C., 2023, *Health Information Exchange: Navigating and Managing a Network of Health Information Systems*. Dixon, B. E. (red.). 2. udg. Academic Press, s. 579-601

Development of a health information system to promote emergency care pathways: A participatory design study

Østervang, C., Lassen, A., Schmidt, T., Coyne, E., Dieperink, K. B. & Jensen, C. M., dec. 2022, I: *Digital Health*. 8

Model for ASsessing the value of Artificial Intelligence in medical imaging (MAS-AI)

Fasterholdt, I., Kjølhede, T., Naghavi-Behzad, M., Schmidt, T., Rautalammi, Q. T. S., Hildebrandt, M. G., Gerdes, A., Barkler, A., Kidholm, K., Rac, V. E. & Rasmussen, B. S. B., 3. okt. 2022, I: *International Journal of Technology Assessment in Health Care*. 38, 1, e74.

Forecasting the COVID-19 Spread in Iran, Italy, and Mexico Using Novel Nonlinear Autoregressive Neural Network and ARIMA-Based Hybrid Models

Naemi, A., Naemi, M., Ekbatani, R. Z., Schmidt, T., Ebrahimi, A., Mansourvar, M. & Wiil, U. K., 2022, *Smart and Sustainable Technology for Resilient Cities and Communities*. Springer, s. 119-135 (Advances in Sustainability Science and Technology).

Modeling and Evaluating the Impact of Social Restrictions on the Spread of COVID-19 Using Machine Learning

Naemi, M., Naemi, A., Ekbatani, R. Z., Ebrahimi, A., Schmidt, T. & Wiil, U. K., 2022, *Smart and Sustainable Technology for Resilient Cities and Communities*. Howlett, R. J., Jain, L. C., Littlewood, J. R. & Balas, M. M. (red.). Springer, s. 107-118 12 s. (Advances in Sustainability Science and Technology).

Quantifying the impact of addressing data challenges in prediction of length of stay

Naemi, A., Schmidt, T., Mansourvar, M., Ebrahimi, A. & Wiil, U. K., dec. 2021, I: *BMC Medical Informatics and Decision Making*. 21, 13 s., 298.

Machine learning techniques for mortality prediction in emergency departments: a systematic review

Naemi, A., Schmidt, T., Mansourvar, M., Naghavi-Behzad, M., Ebrahimi, A. & Wiil, U. K., nov. 2021, I: *BMJ Open*. 11, 11, 10 s., e052663.

Development of an internet-delivered program and platform for the treatment of depression and anxiety in patients with ischemic heart disease in eMindYourHeart

Schmidt, T., Kok, R., Andersen, C. M., Skovbakke, S. J., Ahm, R., Wiil, U. K., Frostholm, L. & Pedersen, S. S., 2. jun. 2021, I: *Informatics for Health and Social Care*. 46, 2, s. 178-191

Internet-based treatment of anxiety and depression in patients with ischaemic heart disease attending cardiac rehabilitation: a feasibility study (eMindYourHeart)

Helmark, L., Ahm, R., Andersen, C. M., Skovbakke, S. J., Kok, R. N., Wiil, U. K., Schmidt, T., Hjelmberg, J. V. B., Frostholm, L., Frydendal, D. H., Hansen, T. B., Zwisler, A. D. O. & Pedersen, S. S., jun. 2021, I: *European Heart Journal - Digital Health*. 2, 2, s. 323-335

Efficacy and cost-effectiveness of a therapist-assisted web-based intervention for depression and anxiety in patients with ischemic heart disease attending cardiac rehabilitation [eMindYourHeart trial]: a randomised controlled trial protocol
Pedersen, S. S., Andersen, C. M., Ahm, R., Skovbakke, S. J., Kok, R., Helmark, C., Wiil, U. K., Schmidt, T., Olsen, K. R., Hjelmborg, J., Zwisler, A.-D. & Frostholm, L., 7. jan. 2021, I: *BMC Cardiovascular Disorders*. 21, 1, s. 20

A Simple Assessment of Information Security Awareness in Hospital Staff Across Five Danish Regions

Schmidt, T., Nøhr, C. & Koppel, R., 2021, *Public Health and Informatics: Proceedings of MIE 2021*. Mantas, J., Stoicu-Tivadar, L., Chronaki, C., Hasman, A., Weber, P., Gallos, P., Crişan-Vida, G., Zoulias, E. & Chirila, O. S. (red.). Amsterdam: IOS Press, Bind 281. s. 635-639 (Studies in Health Technology and Informatics).

Predicting the Risk of Alcohol Use Disorder Using Machine Learning: A Systematic Literature Review

Ebrahimi, A., Wiil, U. K., Schmidt, T., Naemi, A., Nielsen, A. S., Shaikh, G. M. & Mansourvar, M., 2021, I: *IEEE Access*. 9, s. 151697-151712

Prediction of Length of Stay Using Vital Signs at the Admission Time in Emergency Departments

Naemi, A., Schmidt, T., Mansourvar, M., Ebrahimi, A. & Wiil, U. K., 2021, *Innovation in Medicine and Healthcare: Proceedings of 9th KES-InMed 2021*. Chen, Y.-W., Tanaka, S., Howlett, R. J. & Jain, L. C. (red.). Springer, s. 143-153 (Smart Innovation, Systems and Technologies, Bind 242).

Challenges and Recommendations for Implementing a Novel Patient Monitoring System for Emergency Departments

Schmidt, T. & Wiil, U. K., nov. 2020, *2020 IEEE International Conference on Healthcare Informatics: ICHI*. IEEE Press, 6 s. 9374349

Coping with Information Technology Downtime in Hospitals: A Scoping Study

Bamdeg, J. & Schmidt, T., 26. jun. 2020, *The Importance of Health Informatics in Public Health during a Pandemic*. Mantas, J., Hasman, A., Househ, M. S., Gallos, P. & Zoulias, E. (red.). IOS Press, Bind 272. s. 147-150 (Studies in Health Technology and Informatics).

Coping with IT Downtime in Hospitals

Bamdeg, J. & Schmidt, T., 16. jun. 2020, *Digital Personalized Health and Medicine: Proceedings of MIE 2020*. Pape-Haugaard, L., Lovis, C., Madsen, I. C., weber, P., Nielsen, P. H. & Scott, P. (red.). Amsterdam: IOS Press, Bind 270. s. 1229-1230 (Studies in Health Technology and Informatics).

Online Medication Information for Citizens: A Comparison of Demands on eHealth Literacy

Monkman, H., Schmidt, T. & Nøhr, C., 16. jun. 2020, *Digital Personalised Health and Medicine*. Pape-Haugaard, L. B., Lovis, C., Madsen, I. C., Weber, P., Nielsen, P. H. & Scott, P. (red.). Amsterdam: IOS Press, Bind 270. s. 1026-1030 (Studies in Health Technology and Informatics).

Nordic eHealth Benchmarking: Towards evidence informed policies

Nøhr, C., Faxvaag, A., Tsai, C. H., Hardardottir, G. A., Hyppönen, H., Andreassen, H. K., Gilstad, H., Jónsson, H., Reponen, J., Kaipio, J., Øvlsen, M. V., Kangas, M., Bertelsen, P., Koch, S., Villumsen, S., Schmidt, T., Vehko, T. & Vimarlund, V., 2020, Nordic Council of Ministers. 95 s. (TemaNord).

Personalized Predictive Models for Identifying Clinical Deterioration Using LSTM in Emergency Departments

Naemi, A., Schmidt, T., Mansourvar, M. & Wiil, U. K., 2020, *Integrated Citizen Centered Digital Health and Social Care*. Värri, A., Delgado, J., Gallos, P., Häggglund, M., Häyrynen, K., Kinnunen, U.-M., Pape-Haugaard, L. B., Peltonen, L.-M., Saranto, K. & Scott, P. (red.). IOS Press, s. 152-156 (Studies in Health Technology and Informatics, Bind 275).

Prediction of Patients Severity at Emergency Department Using NARX and Ensemble Learning

Naemi, A., Mansourvar, M., Schmidt, T. & Wiil, U. K., 2020, *2020 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*. Park, T., Cho, Y.-R., Hu, X. T., Yoo, I., Woo, H. G., Wang, J., Facelli, J., Nam, S. & Kang, M. (red.). IEEE, s. 2793-2799

Using a Mobile Diary App in the Treatment of Borderline Personality Disorder: Mixed Methods Feasibility Study

Helweg-Joergensen, S., Schmidt, T., Lichtenstein, M. B. & Pedersen, S. S., 30. sep. 2019, I: *JMIR Formative Research*. 3, 3, 12 s., e12852.

Predicting Dropouts From an Electronic Health Platform for Lifestyle Interventions: Analysis of Methods and Predictors

Pedersen, D. H., Mansourvar, M., Sortsø, C. & Schmidt, T., 4. sep. 2019, I: *Journal of Medical Internet Research*. 21, 9, 12 s., e13617.

Design and Evaluation of a Patient Monitoring Dashboard for Emergency Departments

Schmidt, T., Brabrand, M., Lassen, A. T. & Wiil, U. K., 21. aug. 2019, *MEDINFO 2019: Health and Wellbeing e-Networks for All*. Ohno-Machado, L. & Séroussi, B. (red.). IOS Press, s. 788-792 (Studies in Health Technology and Informatics, Bind 264).

Model for Evaluating the Implementation of a Third Generation EHR System

Hansen, M. B., Kidholm, K., Nøhr, C., Schmidt, T. & Elmholdt, K. T., 9. aug. 2019, *Context Sensitive Health Informatics: Sustainability in Dynamic Ecosystems*. Marcilly, R., Kuziemy, C. E., Nohr, C. & Pelayo, S. (red.). IOS Press, s. 141-147 (Studies in Health Technology and Informatics, Bind 265).

Overcoming the monetization challenge in freemium online games

Beltagui, A., Schmidt, T., Chandi, M. & Roberts, D. L., 8. jul. 2019, I: *Industrial Management & Data Systems*. 119, 6, s. 1339-1356

Utilization of a Novel Patient Monitoring Dashboard in Emergency Departments

Ulaganathan, S., Fatah, T., Schmidt, T. & Nøhr, C., 1. jul. 2019, *Health Informatics Vision: From Data via Information to Knowledge*. Mantas, J., Hasman, A., Gallos, P., Kolokathi, A., Househ, M. S. & Liaskos, J. (red.). IOS Press, s. 260-263 (Studies in Health Technology and Informatics, Bind 262).

Next generation EHRs-what problems are these systems aiming to solve?

Schmidt, T., Nøhr, C., Vingtoft, S. & Turner, P., 1. jan. 2019, *Improving Usability, Safety and Patient Outcomes with Health Information Technology: From Research to Practice*. Kuo, A. M.-H., Kushniruk, A., Lau, F., Borycki, E. M., Bliss, G., Monkman, H., Roudsari, A. V., Bartle-Clar, J. A. & Courtney, K. L. (red.). IOS Press, s. 370-374 (Studies in Health Technology and Informatics, Bind 257).

A Comparison of Online Consumer Medication Information from Canada, Denmark, and the United States of America

Monkman, H., Schmidt, T. & Nøhr, C., 2019. 1 s.

Managing Change of EHR Systems

Hansen, M. B., Nørup, I., Elmholdt, K. T., Kidholm, K., Nohr, C. & Schmidt, T., 2019, *SHI 2019: Proceedings of the 17th Scandinavian Conference on Health Informatics*. Granja, C. & Solvoll, T. (red.). Linköping University Electronic Press, Linköpings universitet: Linköping University Electronic Press, s. 104-107 (Linköping Electronic Conference Proceedings, Bind 161).

Effectiveness of a comprehensive interactive eHealth intervention on patient-reported and clinical outcomes in patients with an implantable cardioverter defibrillator [ACQUIRE-ICD trial]: study protocol of a national Danish randomised controlled trial

Pedersen, S. S., Skovbakke, S. J., Wiil, U. K., Schmidt, T., dePont Christensen, R., Brandt, C. J., Sørensen, J., Vinther, M., Larroudé, C. E., Melchior, T. M., Riahi, S., Smolderen, K. G. E., Spertus, J. A., Johansen, J. B. & Nielsen, J. C., 3. jul. 2018, I: *BMC Cardiovascular Disorders*. 18, 12 s., 136.

A Personalized and Interactive Web-Based Health Care Innovation to Advance the Quality of Life and Care of Patients With Heart Failure (ACQUIRE-HF): A Mixed Methods Feasibility Study

Pedersen, S. S., Schmidt, T., Skovbakke, S. J., Wiil, U. K., Egstrup, K., Smolderen, K. G. & Spertus, J. A., 23. maj 2017, I: *JMIR Research Protocols*. 6, 5, 12 s., e96.

Development of a Web-Based Health Care Intervention for Patients With Heart Disease: Lessons Learned From a Participatory design Study

Nørgaard, B., Sandvei, M., Rottmann, N., Johannessen, H., Wiil, U. K., Schmidt, T. & Pedersen, S. S., 17. maj 2017, I: *J M I R Research Protocols*. 6, 5

Factors related to monitoring during admission of acute patients

Schmidt, T., Bech, C. L. N., Brabrand, M., Wiil, U. K. & Lassen, A. T., 2017, I: *Journal of Clinical Monitoring and Computing*. 31, 3, s. 641–649

Identification of Patients at Risk and Patients in Need

Schmidt, T., 2017, Syddansk Universitet. Det Tekniske Fakultet.

Why Can't We All Get Along? A study of Hygge and Janteloven in a Danish social-casual games community

Beltaoui, A. & Schmidt, T., 2017, I: *Games and Culture*. 12, 5, s. 403-425

A Patient Deterioration Warning System for Boosting Situational Awareness of Monitored Patients

Schmidt, T., Lassen, A. T. & Wiil, U. K., 6. dec. 2016, *Proceedings of the 2nd IEEE International Conference on Healthcare Informatics*. Fu, W.-T., Zheng, K., Hodges, L., Stiglic, G. & Blandford, A. (red.). IEEE Press, s. 129-138 7776337. (Healthcare Informatics).

Occurrence of elevated shock index in acute patients and development of a proportional shock index metric

Schmidt, T., Lassen, A. T. & Wiil, U. K., aug. 2016, *2016 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBC 2016*. IEEE Press, Bind 2016. s. 2411-2414 7591216. (Proceedings of the International Conference of the IEEE Engineering in Medicine and Biology Society).

Identifying Patients at Risk and Patients in Need

Schmidt, T., 30. nov. 2015, 291 s.

Clustering Emergency Department Patients: An Assessment of Group Normality

Schmidt, T., Hallam, J., Lassen, A. T. & Wiil, U. K., 4. nov. 2015, *2015 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBC 2015*. IEEE Press, Bind 2015. s. 6824-6829 7319961

Nurse utilization of patient monitoring systems at an Emergency Department bedside ward: A survey analysis

Schmidt, T., Lassen, A. T. & Wiil, U. K., 20. okt. 2015, I: *International Journal of Integrated Care*. 15, ETC Conference Supplement 2015, 1 s.

Can Google Glasses facilitate work for nurses in the Emergency Department?

Schmidt, T., Hansen, C. M. & Dahlin, J., 16. jun. 2015, I: *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*. 23, 1. Supplement, 1 s., A53.

Monitor Alarms in the Emergency Department are frequent and unequally distributed during a day

Schmidt, T., Bech, C. L. N., Glud, M., Wiil, U. K. & Lassen, A. T., 16. jun. 2015, I: *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*. 23, 1. Supplement, 1 s., A41.

Triage specific patient monitoring greatly impacts the number of alarming events in the Emergency Department

Bech, C. L. N., Schmidt, T., Glud, M., Wiil, U. K. & Lassen, A. T., 16. jun. 2015, I: *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*. 23, Supplement 1., 1 s., A42.

Identifying Patients at Risk of Deterioration in a Danish Emergency Department

Schmidt, T., Lassen, A. T. & Wiil, U. K., 29. apr. 2015. 1 s.

Identifying Patients at Risk of Deterioration in the Joint Emergency Department

Schmidt, T. & Wiil, U. K., 25. feb. 2015, I: *Cognition, Technology & Work*. 17, 4, s. 529-545

A 3-Stage Approach to Identifying Patients at Risk of Deterioration in Emergency Departments

Schmidt, T. & Wiil, U. K., 2015, *HEALTHINF 2015 - 8th International Conference on Health Informatics, Proceedings; Part of 8th International Joint Conference on Biomedical Engineering Systems and Technologies, BIOSTEC 2015*. Verdier, C.,

Bienkiewicz, M., Fred, A., Gamboa, H. & Elias, D. (red.). Institute for Systems and Technologies of Information, Control and Communication, s. 470-477

Monitor Alarms in the Emergency Department are frequent and unequally distributed during a day

Schmidt, T., Bech, C. L. N., Glud, M., Wiil, U. K. & Lassen, A. T., 20. nov. 2014.

Triage specific profiles greatly impact the number of alarming events in the emergency department

Bech, C. L. N., Schmidt, T., Glud, M., Wiil, U. K. & Lassen, A. T., 20. nov. 2014.

Agility in a small software firm: a sense-and-respond analysis

Schmidt, T. & Mathiassen, L., 2009, I: International Journal of Business Information Systems. 4, 1, s. 85-104 19 s.

Ansættelsehistorik

Ansættelse

Mærsk Mc-Kinney Møller Institutet

SDU

Odense M

29. sep. 2023 → present

Gæsteforsker

KI, OUH, Forskningsenhed for CIMT - Center for Innovativ Medicinsk Teknologi (Odense)

SDU

17. apr. 2024 → 30. apr. 2027

Lektor

SDU Health Informatics and Technology

SDU

29. sep. 2023 → present

2016-2017: Postdoc, Technical Faculty, University of Southern Denmark, Odense

Participating in the Acquire-HF project; a large study focusing on development and effect evaluation of clinical and economic benefits of empowering heart failure patients through the use of an interactive web-based suite of support tools.

2012 – 2016: Ph.D. Student, Technical Faculty, University of Southern Denmark, Odense

Project 'Identifying patients at risk and patients in need' in the newly reestablished Emergency Department at Odense University Hospital. The aim of my research is to improve decision support systems surrounding monitoring of patients and early warning systems to prevent adverse events.

My research involves the areas of machine learning, knowledge management, clinical decision support systems, human computer interaction and systems integration (HL7).

The project is a part of Patient@home project (<http://www.patientathome.dk>).

2010 – 2013 : Research Fellow in Marie Curie FP7 Action programme project

Participating as an industry representative for Certus in a case based research project on how small and medium sized enterprises can transform their services into the experience economy. I have been seconded to Reykjavik University for 4 months in 2011, and 2 months to Nottingham University in 2012.

During this project I have gained experience with:

- Survey construction and data gathering, user modeling, collaborative analysis and transfer of knowledge across domains. Learned multiple ways to conduct data analysis via quantitative and qualitative methods.
- 14 month supervision of research fellow seconded to our firm.
- Collaboration on articles for scientific journals.

2009 - 2012: Product Manager for Certus/Betware

As the product manager in a medium sized firm, I have experience with requirements gathering and product delivery in international, cross-organizational, multi-team projects of high complexity for multiplayer skill-based community platforms with both money gaming and virtual currencies. Furthermore I have conducted business cases, delivered visions and strategies, performed difficult resource planning & estimation. Search engine optimization and marketing campaigns. As the product manager it is my duty to stay on top of trends within my product's context, this is done through interviews, data gathering & analysis and execution of workshops and usability testing.

In my time as product manager, I have steered the following projects:

- A platform migration project for TV2. Included one team for 22 months. Advocating user needs and insight.
- A money gaming project; two teams for 3 months. Communicating complex scope and facilitating knowledge between government institutions and internal stakeholders.
- A network architecture project; delivering a white label transformation and a completely new network/local community gaming architecture.
- Customer integration projects; integrating new clients and training them in maximizing product value.
- Crowd based translation; steered internationalization of our platform.
- Formalization of support and staff supervision.

2007 - 2009 : Online Community Organizer & Java Enterprise Developer for Certus/Betware

Software development on a (enterprise) Java web-based platform using Struts, javascript (Jquery), Spring and Ajax technologies. Development on a proprietary Java based gaming platform.

Simultaneously I have been working as the Online Community Organizer for several setups based on our gaming and community platform. Gained experience with understanding the users side of a problem, tracking issues, planning & executing workshops. Generally gaining a deep understanding of player incentives and engagement factors.

As a developer I have contributed with:

- Designing and implementing player seating randomization tools in Java
- Game client redesign in Java
- Creation of log parsing tools for collusion detection
- Frontend development of B2C system

Education

2012 - 2016 Ph.D Student in Software Engineering, University of Southern Denmark, Odense.

Working title 'Identifying Patients at Risk and Patients in Need'.

2000 - 2007 M.Sc in Computer Systems Engineering, University of Southern Denmark, Odense.

Specialized in software development, (agile) processes and organizational evaluation.

Thesis title 'Challenges to Software Development in Small Firms', graded 11.

Certification / Courses