

DORIEN HERREMANS

Position Assistant Professor
Information Systems and Design Pillar
Singapore University of Technology and Design

Contact *dorien.herremans@gmail.com*
http://dorienherremans.com

Details Gender: Female
Date of birth: 26th of July, 1982

Research interest My research interests lie in furthering state-of-the-art techniques and designing novel applications in the intersection of *machine learning*, *optimization* and *digital music*: generating structured music, automatic piano fingering, dance hit prediction, emotion detection, music and audio matching, audio classification, music information retrieval in a health setting and other similar projects.

Teaching interest My main teaching interests focus on *optimization* techniques (applied algorithms) and *data mining/machine learning*. I also have a experience teaching more general topics in *computer engineering* such as programming languages (including Java, web/mobile), databases and IT project management courses.

PROFESSIONAL EXPERIENCE

August 2017–... **Singapore University of Technology and Design (SUTD)**

*Assistant Professor (Tenure Track), Information Systems Technology and Design Pillar
Primary appointment*

Director, SUTD Game Lab

August 2017–... **Agency for Science, Technology and Research (A*STAR)**

Joint appointment with SUTD - Institute of High Performance Computing

December 2017–... **NVIDIA Deep Learning Institute**

Certified Deep Learning Instructor & Deep Learning University Ambassador

Feb. 2017–April 2017 **Singapore University of Technology and Design (SUTD)**

Visiting Faculty, Information Systems Technology and Design Pillar

with: Prof. dr. Simon Lui

June 2015–May 2017 **Queen Mary University of London**

Marie-Curie fellow, School of Electrical Engineering and Computer Science

Marie Skłodowska-Curie individual fellowship for experienced researchers H2020 (98% evaluation score)

Research topic: MorpheuS: Hybrid Machine Learning – Optimization techniques To Generate Structured Music Through Morphing And Fusion with: Prof. Dr. Elaine Chew, Center for Digital Music (C4DM)

2010-2015 **University of Antwerp, Belgium**

Mandaatassistent Department of Engineering Management (50% teaching, 50% research)

Research topic: Music and Operations Research

May-June 2014 **Universidad del País Vasco UPV/EHU, San Sebastián, Spain**

Visiting Researcher, Department of Computer Science and Artificial Intelligence

Invited by Prof. Dr. Darrell Conklin

Topic: Generating structured music using quality metrics based on Markov models. Funded by EU FP7 project: Lrn2cre8 grant number: 610859.

2009–2010 **Vanbreda International, Antwerp, Belgium**

Webmaster

Collaboration on project to build a new Drupal site and management of around 170 microsites.

2006–2009 **Holistic Vibes Sàrl (own company), Sierre, Switzerland**

Web Developer & author

Part-time Drupal development/consulting.

2006–2008 **Les Roches, International School of Hotel Management, Montana, Switzerland**

IT Lecturer

Ranked among the top 3 hospitality management schools in the world (Taylor Nelson Sofres, global research, 2013)

EDUCATION

3/2010–12/2014 **PhD in Applied Economics**

University of Antwerp, Belgium

Faculty of Applied Economics, Department of Engineering Management

Topic: Compose \equiv Compute, Computer Generation and Classification of Music through Operations Research Methods

Supervisor: Prof. Dr. Kenneth Sørensen

University of Antwerp is AACSB accredited

9/2000–7/2005 **MSc Business Engineering in Management Information Systems**

University of Antwerp, Belgium
Faculty of Applied Economics
(5 year program consisting of a degree in Applied Economics and Engineering)
Major: Management Information Systems
Minor: Operations Research
Thesis: *Tabu Search For The Optimization Of Musical Fragments*
Grade: Great distinction
University of Antwerp is AACSB accredited

GRANTS

- IDMA *Interactive Digital Media R&D Program Office, Singapore. Director/PI.* Game Research, Education, and Training (GREaT). SGD 5,690,000. Oct 2012-Sept 2018. I took over PI/Directorship in Jan 2018.
- MOE Tier 2 *aiMuVi: AI Music generated from Videos. PI.* SGD 648,216. Jul 2019- Jun 2022.
- MIT-SUTD IDC *SUTD-MIT International Design Centre Research Project PI.* Designing an AR Game for climate change and awareness . SGD 399,475.20. 17 March 2019 - 28 February 2020.
- MIT-SUTD IDC *SUTD-MIT International Design Centre Research Project PI.* An Augmented Reality Game for Climate Change Awareness. Grant no. IDSF1200118OH. SGD 341,920. 17 October 2018 - 28 February 2019.
- MIT-SUTD IDC *SUTD-MIT International Design Centre Research Project co-PI.* An intelligent system for understanding and matching perceived emotion from video with music. SGD 497,842. June 2018-June 2020.
- Game Lab Contract *SUTD PI.* Dual-language Intervention in Semantic memory – Computerized (DISC) SGD 57,500. December 2018 - May 2019.
- NUHS *NUHS Innovation Grant co-I.* The development of an interactive game-based application for speech practice. SGD 50,000. August 2018-August 2019.
- MIT-SUTD IDC *SUTD-MIT International Design Centre Research Project - Infrastructure grant co-PI.* GPU server for Artificial Intelligence Research and Applications in Affective Computing. SGD 104,405.25. Awarded July 2018.
- MIT *SMART. PI.* An audio content based semantic music search system. ING1611118-ICT. 2018. SGD 247,588. Oct 2016-Jan 2019.
- MOE *MAF. co-PI Teaching and Learning English Pronunciation by Generating the Vocal Tract Shapes from the Frequency Domain Information.* PI: Dr Chen Jer Ming. AFD 05/15 SL. SGD 241,539. 18 Feb 2016 - 17 Oct 2018
- MIT *SMART Ignition grant. co-PI Acoustic Analytic Apps for Smart Telehealth Screening - creating a big data for deep learning.* PI: Dr. Hee Hwan Ing (KKH). SGD 49,560. Feb. 2017- feb 2018.
- SUTD *Startup Research grant. PI.* Advancing AI and machine learning with applications in digital music and beyond. SRG ISTD 2017 129. 2017. SGD 100,000

European Commission *Marie Skłodowska-Curie individual fellowship for experienced researchers. Fellow.* Grant number 658914, 2015. €183,454.80

FWO *Travel grant* number K221314N, summer school on Computer Music Analysis (Athens, Greece), 2014.

FWO *Travel grant* number K1D5514N, ICMC/SMC conference (Athens, Greece), 2014.

RESEARCH GROUPS/PROJECTS

2017-present **Music AI**

ISTD, Singapore University of Technology and Design

2017-present **Music Cognition Lab**

Institute for High Performance Computing, A*STAR

2015–2017 **MuPaE** – Music Performance and Expression Group

Center for digital music (C4DM), Queen Mary University of London

2010–2016 **ANT/OR** – University of Antwerp Operations Research Group

University of Antwerp, Belgium

2013–2015 **Music Informatics Group**

Universidad del País Vasco UPV/EHU, San Sebastián, Spain

2013–2015 **Lrn2cre8**, FP7 European project – research collaboratorA

PUBLICATIONS

Preprints of the publications below are available at <http://dorienherremans.com/biblio>

Journal Papers Chuan C.H., Agres K., Herremans D. 2018. **From Context to Concept: Exploring Semantic Relationships in Music with Word2Vec**. *Neural Computing and Applications*, Springer. Impact factor 4.213.

Lin K.W.E, Balamurali B.T., Koh E., Lui S., Herremans D. 2018. **Singing Voice Separation Using a Deep Convolutional Neural Network Trained by Ideal Binary Mask and Cross Entropy**. *Neural Computing and Applications*, Springer. DOI: 10.1007/s00521-018-3933-z. Impact factor 4.213.

Herremans D., Chew E. 2018. **A Novel Interface for the Graphical Analysis of Music Practice Behaviours**. *Frontiers in Psychology - Human-Media Interaction*. Impact factor 2.089.

Sturm B., Ben-Tal O., Monaghan U., Collins N., Herremans D., Chew E., Hadjeres G., Deruty E., Pachet F. 2019. **Machine Learning Research that Matters for Music Creation: A Case Study**. *Journal of New Music Research*. 48(1). pp 36-55. Impact factor 1.122.

Angus, N, Anderson, H, Chen, JM, Lui, S, Herremans, D. 2018. **Minimally Simple Binaural Room Modelling Using a Single Feedback Delay Network**. *Journal of the Audio Engineering Society*. 66(10):791-807. Impact Factor: 0.856.

- Angus, N, Anderson, H, Chen, JM, Lui, S, Herremans, D. 2018. **Perceptual evaluation of measures of spectral variance.** *Journal of the Acoustical Society of America.* 143(6):3300-3311. Impact Factor: 1.547.
- Herremans, D, Chuan, C.-H., Chew, E. 2017. **A Functional Taxonomy of Music Generation Systems.** *ACM Computing Surveys.* 50(5). 69:1-30. Impact Factor: 6.748. CORE rank: A+. SJR: Q1 (“Computer Science”), Q1 (“Mathematics”)
- Herremans, D, Chew, E. 2017. **Morpheus: generating structured music with constrained patterns and tension.** *IEEE Transactions on Affective Computing.* PP(1). Impact Factor: 3.149
- Cunha, N., Subramanian, A., Herremans, D. 2017. **An integer programming-based system for generating guitar solos.** *Journal of Operations Research.* 69:6, 971-985. Impact Factor: 1.077
- Balliauw, M, Herremans, D, Palhazi Cuervo, D, Sörensen K. 2017. **A variable neighbourhood search algorithm to generate piano fingerings for polyphonic sheet music.** *International Transactions of Operations Research.* Special Issue on Variable Neighbourhood Search. 23:4:509–535. Impact Factor 1.745
- Agres, K, Herremans, D., Bigo, L, Conklin, C. 2017. **The Effect of Harmonic Structure on the Enjoyment of Uplifting Trance Music.** *Frontiers in Psychology – Cognitive Science* 7(1999) Impact factor 2.463. SJR: Q1 (“Psychology”)
- Herremans, D, Weisser S., Sörensen K., Conklin D. 2015. **Generating structured music for bagana using quality metrics based on Markov models.** *Expert Systems With Applications.* 42(21):7424–7435. Impact factor 3.928. SJR: Q1 (“AI”, “Computer Science Applications” and “Engineering”), CORE rank: B
- Herremans, D, Sörensen K. , Martens D. 2015. **Classification and generation of composer-specific music using global feature models and variable neighborhood search.** *Computer Music Journal.* 39(3):71-91. Impact Factor: 0.474. SJR: Q1 (“Music”), Q2 (“Media Technology”), Q3 (“Computer Science Applications”)
- Herremans, D, Martens D, Sörensen K. 2014. **Dance Hit Song Prediction.** *Journal of New Music Research – special issue on music and machine learning.* 43(3):291–302. Impact factor 1.122. SJR: Q1 (“Music” and “Visual Arts and Performing Arts”)
- Herremans, D, Sörensen K. 2013. **Composing Fifth Species Counterpoint Music With A Variable Neighbourhood Search Algorithm.** *Expert Systems with Applications.* 40(16):6427–6437. Impact factor 3.928. SJR: Q1 (“AI”, “Computer Science Applications” and “Engineering”), CORE rank: B
- Herremans, D, Sörensen K. 2012. **Composing first species counterpoint musical scores with a variable neighbourhood search algorithm.** *Journal of Mathematics and the Arts.* 6(04):169-189. SJR: Q1 (“Visual Arts and Performing Arts”), Q4 (“Mathematics” and “Computer Graphics and Computer Aided Design”)
- PhD Dissertation Herremans, D. 2014. **Compose \equiv Compute: Computer generation and classification of music through operation research methods.** University of Antwerp, Faculty of Applied Economics. ISBN 978-90-8994-114-5. 250p.
- PhD abstract Herremans, D. 2015. **Compose \equiv Compute: Computer generation and classification of music through operations research methods** *4OR.* 13(3):335-336. Impact factor: 1.371, SJR: Q1 (“Management Information Systems”), Q2 (“Computational Theory and Mathematics” and “Theoretical Computer Science”)
- Kin Wah C, Balamurali BT, Roig G, Herremans D. 2018. Blacklisted speaker identification using triplet neural networks. MCE2018: The 1st Multi-target speaker detection and identification Challenge Evaluation. MIT.
- Chuan C.H., Herremans D. 2018. **Modeling temporal tonal relations in poly-**

phonic music through deep networks with a novel image-based representation. *Proceedings of the 32th AAAI Conference on Artificial Intelligence.* New Orleans, US. 2018. CORE Rank A*.

Agres, K, Herremans, D. 2018. **The Structure of Chord Progressions Influences Listeners' Enjoyment and Absorptive States in EDM.** *Proceedings of the 15th International Conference for Music Perception and Cognition (ICMPC).* Sydney, Australia.

Agres A., Herremans D. 2017. **Music and Motion-Detection: A Game Prototype for Rehabilitation and Strengthening in the Elderly.** *Proceedings of the IEEE International Conference on Orange Technologies (ICOT).* Singapore. 2017.

Herremans D., Bergmans T. 2017. **Hit Song Prediction Based on Early Adopter Data and Audio Features.** *The 18th International Society for Music Information Retrieval Conference (ISMIR) - Late Breaking Demo.* Suzhou, China. 2017.

Herremans D., Lauwers W. 2017. **Visualizing the evolution of alternative hit charts.** *The 18th International Society for Music Information Retrieval Conference (ISMIR) - Late Breaking Demo.* Suzhou, China. 2017.

Herremans D., Chuan C.-H. 2017. **Modeling music with Word2vec.** *Proceedings the First International Workshop for Music and Deep Learning, joint with IJCNN.* Anchorage, US. 2017.

Herremans D., Yang S., Chuan C.-H., Barthet M., Chew E. 2017. **IMMA-Emo: A Multimodal Interface for Visualising Score- and Audio-synchronised Emotion Annotations.** *Proceedings Audio Mostly (ACM).* London, UK. 2017.

Herremans, D, Chuan, C.-H. 2017. **A multi-modal platform for semantic music analysis: visualizing audio- and score-based tension.** *Proceedings of the 11th International Conference on Semantic Computing IEEE ICSC 2017.* San Diego, US. 2017.

Herremans, D, Chew E. 2016. **Morpheus: Automatic music generation with recurrent pattern constraints and tension profiles.** *Proceedings of the IEEE TENCON.* Singapore. 2016.

Cunha, N, Subramanian, A, Herremans, D. 2016. **Uma abordagem baseada em programação linear inteira para a geração de solos de guitarra.** *Proceedings of the XLVIII Simpósio Brasileiro de Pesquisa Operacional (SBPO).* Vitoria, Brasil.

Agres, K, Bigo, L, Herremans, D, Conklin, D. 2016. **The Effect of Repetitive Structure on Enjoyment in Uplifting Trance Music.** *Proceedings of the 14th International Conference for Music Perception and Cognition (ICMPC).* San Francisco, US. 280-282.

Herremans, D, Chew, E. 2016. **Tension ribbons: quantifying and visualising tonal tension.** *Proceedings of the Second International Conference on Technologies for Music Notation and Representation (TENOR).* Cambridge, UK. 8-18.

Herremans, D, Sørensen K. 2013. **FuX, an Android app that generates counterpoint.** *Proceedings of the IEEE Symposium on Computational Intelligence for Creativity and Affective Computing (CICAC).* Singapore. 48-55.

Herremans, D, Sørensen, K, Conklin, D. 2014. **Sampling the extrema from statistical models of music with variable neighbourhood search**. *Proceedings of ICMC-SMC*. Athens. 1096–1103.

Book Herremans, D. 2010. **Drupal 6: Ultimate Community Site Guide**. Sun Flare Ltd, Switzerland, ISBN 978-2839904902.

Book Chapters Agres, K, Bigo, L, Herremans, D.. In Press. **The impact of musical structure on enjoyment and absorptive listening states in trance music**. *Music and Consciousness II*. Oxford University Press.

Herremans, D, Martens, D, Sørensen, K. 2015. **Composer classification models for music-theory building**. Computational Music Analysis, Editors: David Meredith, Springer, Switzerland, ISBN 978-3-319-25929-1 (Print) 978-3-319-25931-4 (Online).

Balliauw, M , Herremans, D, Palhazi Cuervo, D, Sørensen. 2015. **Generating fingerings for polyphonic piano music with a tabu search algorithm**. *Mathematics and Computation in Music. Lecture Notes in Computer Science*, Springer International Publishing, 9110:149-160. Impact factor: 0.302, STJ: Q2 (“Computer Science”), Q4 (“Theoretical Computer Science”)

INVITED TALKS, GUEST LECTURES AND SEMINARS

2018 *SUTD Game Lab*. Town Hall talk. November 21, SUTD, Singapore. 2018.

Automatic Music Generation. Guest lecture for Music Cognition (NUS - YST). October 31, SUTD, Singapore. 2018.

The medium: Augmented reality games. AR Games for Climate Change! Workshop. September 24, SUTD, Singapore. 2018.

Music and AI: Generating music and more!. Invited talk. One-North Festival. September 7th, Singapore. 2018.

Modeling Music with LSTMs and word2vec. Invited talk. Workshop on Human level general AI. June 7th. Singapore. 2018

Transforming the music industry with data. Invited Conference Talk. April 11, Women in Data Science Conference, Singapore. 2018.

Modeling music with machine learning, a music generation perspective. Guest lecture for Sound and Music Computing course. March 22, National University of Singapore (NUS), Singapore. 2018.

Applications of AI in music. Invited talk. Music Research Symposium. February 2, A*STAR, Singapore. 2018.

Deep Learning Demystified / Image classification with DIGITS, NVIDIA Deep Learning Institute Workshop, SGInnovate, Singapore, January 19th, 2018.

2017 *Morpheus: structured music generation with pattern detection and tension*. Invited talk. Jukedeck. Lunch & Learn seminar, London, UK, May 31th, 2017.

Machine learning and optimization for cutting edge applications in digital music. In-

- vited Seminar – Singapore University of Technology and Design (SUTD), Singapore, April 27th, 2017.
- 2016 *Machine learning and optimization applied to digital music*. Invited seminar – Agency for Science Technology and Research (A*STAR), Singapore, November 21th, 2016.
- Morphing Music According to a Long-term Tension Profile and Detected Patterns*. Invited Seminar – Institut de Recherche et Coordination Acoustique/Musique (IRCAM), Paris, France, April 20th, 2016.
- Morpheus: generating music with structure*. Stimulus talk at Dagstuhl Seminar – Computational Music Structure Analysis, Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Germany, February 28th–March 4th, 2016.
- Digital representations of music & Automatic music generation*, guest lecture for the Music and speech perception course, Queen Mary University of London, UK, February 2016.
- 2015 *Generating structured music using operations research methods*, Complex Systems Seminar Series, School of Mathematical Sciences, Queen Mary University of London, UK, June 19th, 2015.
- Music and operations research: applications in automatic generation music and dance hit prediction*, Seminar, Department of Computer Science, Research Group SCALAB, Universidad Carlos III de Madrid, Spain, November 27th, 2015.
- Generating structured music with local optimisation and machine learning*, Seminar, Department of Computer Science, Imperial College London, UK, October 14th, 2015.
- An automatic composition system for structured music based on optimization and machine learning*, Seminar, Harvey-Mudd College, Claremont, US, July 23rd, 2015.
- From music theory to machine learning for evaluating generated music*, Seminar, Department of Music (part of summer school), University of San Diego (UCSD), San Diego, US, July 17th, 2015.
- Setting Optimal Parameters Of Metaheuristic Algorithms*, guest lecture in Doctoral Course on Metaheuristics, University of Antwerp, Belgium, April 8, 2015.
- 2014 *Setting Optimal Parameters of a VNS for Music Generation*, guest lecture in Doctoral Course on Metaheuristics, University of Antwerp, Belgium, April 10, 2014.
- 2013 *Classifying And Generating Composer Specific Music*, Research Seminar, Queen Mary University, London, UK, Dec 6, 2013.
- 2012 *Classifying And Generating Composer Specific Music*, Research Seminar, Department of Engineering Management, University of Antwerp, Belgium, Nov 16, 2012.
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PRESENTATIONS AT CONFERENCES

- 2017 *Hit Song Prediction Based on Early Adopter Data and Audio Features*. The 18th International Society for Music Information Retrieval Conference (ISMIR) - Late Breaking Demo. Suzhou, October 23-27, China. 2017.
- Visualizing the evolution of alternative hit charts*. The 18th International Society for Music Information Retrieval Conference (ISMIR) - Late Breaking Demo. October 23-27, Suzhou, China. 2017.
- Modeling music with Word2vec*. First International Workshop on Music and Deep Learning joint with IJCNN, Anchorage, US, May 18–19, 2017.
- 2016 *Morpheus: automatic music generation with recurrent pattern constraints and tension profiles*. IEEE TENCON, November, Singapore, September 21–24, 2016.
- Clouds and vectors in the spiral array as measures of tonal tension*. 14th International Conference for Music Perception and Cognition (ICMPC), San Francisco, US, July 5-9, 2016.
- Music generation with structural constraints: an operations research approach*, ORBEL 30 (Belgian Association of Operations Research), Catholic University of Leuven, Louvain-la-Neuve, Belgium, January 27–28, 2016.
- 2015 *Generating Fingerings for Polyphonic Piano Music with a Tabu Search Algorithm*, The Fifth Biennial International Conference on Mathematics and Computation in Music (MCM 2015), Queen Mary University of London, UK, June 22–25, 2015.
- Generating music with an optimization algorithm using a Markov based objective function*, ORBEL 29 (Belgian Association of Operations Research), University of Antwerp, Belgium, Feb 5–6, 2015.
- 2014 *Markov Based Quality Metrics For Generating Structured Music With Optimization Techniques*, DMRN+9: Digital Music Research Network One-day Workshop 2014, Queen Mary University, London, UK, Dec 16, 2014. – **Funded by Lrn2Cre8 FP7**
- Sampling the extrema from statistical models of music with neighbourhood search*, SMC/ICMC - 40th International Computer Music Conference joint with the 11th Sound & Music Computing conference, Athens, Greece, September 14-20, 2014. – **Funded by FWO travel grant**
- Composing counterpoint music with variable neighbourhood search*, Bridges, Seoul, South-Korea, August 14-18, 2014. (invited speaker in JMA session)
- Sampling and statistical models*, Workshop on EDM, Sony Computer Science Laboratory, Paris, France, July 10-11, 2014. – **Funded by Lrn2Cre8 FP7**
- First species counterpoint music generation with VNS and vertical viewpoints*, ORBEL 28 (Belgian Association of Operations Research), University of Mons, Belgium, Jan 30–31, 2014.
- 2013 *First species counterpoint generation with VNS and vertical viewpoints*, DMRN+8: Digital Music Research Network One-day Workshop 2013, Queen Mary University, London, UK, Dec 17, 2013. – **Funded by Lrn2Cre8 FP7**

Dance Hit Song Science, Workshop on Music and Machine Learning (MML), ECML/PKDD 2013, Prague, Czech-Republic September 23, 2013

Classifying and Generating Composer Specific Music, European Conference on Data Analysis (ECDA), Luxembourg, June 10–12, 2013.

Fux, an Android App that Generates Counterpoint Music, IEEE SSCI - Symposium on Computational Intelligence for Creativity and Affective Computing (CICAC), Singapore, April 16–19, 2013.

2012 *Composing Counterpoint Music With VNS, EU/ME meeting 2012, Copenhagen, Denmark May 10–11, 2012.*

Composing Counterpoint Music With A Variable Neighbourhood Search, ORBEL 26 (Belgian Association of Operations Research), Université Libre de Bruxelles, Brussels, Belgium, Feb 2–3, 2012.

Composing Counterpoint Music With Variable Neighbourhood Search, EURO 2012, Vilnius, Lithuania Jul 8–11, 2012.

2010 *A Variable Neighbourhood Search Algorithm for Composing First Species Counterpoint Musical Fragments, Doctoral Day, University of Antwerp Applied Economics, Antwerp, Belgium, Nov 23, 2010.*

EXTENDED ABSTRACTS

2016 Herremans D., Chew E. *Morpheus: constraining structure in automatic music generation*. Report of Dagstuhl seminar on Computational Music Structure Analysis. Leibniz-Zentrum für Informatik, Germany, February 28th–March 4th, ISSN: 2192-5283, 2016.

Herremans, D, Chew E. *Music generation with structural constraints: an operations research approach*. 30th Annual Conference of the Belgian Operational Research (OR) Society (ORBEL30). Louvain-La-Neuve, Belgium, Jan 2016. 37-39.

2015 Herremans D., Chew E. *Clouds and vectors in the spiral array as measures of tonal tension*. Proceedings of the 14th International Conference for Music Perception and Cognition (ICMPC). San Francisco, US. July 2015. 280-282.

Herremans D., Weisser S., Sørensen K., Conklin D. *Generating music with an optimization algorithm using a Markov based objective function*. ORBEL29, Belgian Conference on Operations Research. Antwerp, Belgium. Jan 2015

2014 Herremans D., Sørensen K., Conklin D. *Markov Based Quality Metrics For Generating Structured Music With Optimization Techniques*, DMRN+9: Digital Music Research Network One-day Workshop 2014, Queen Mary University, London, UK, Dec 16, 2014.

Herremans D., Sørensen K., Conklin D. *First species counterpoint generation with VNS and vertical viewpoints*. Annual Conference of the Belgian Operation Research Society (ORBEL28). Feb 2014

2013 Herremans, D., Sørensen, K, Conklin, D. *First species counterpoint generation with*

VNS and vertical viewpoints, DMRN+8: Digital Music Research Network One-day Workshop 2013, Queen Mary University, London, UK, Dec 17, 2013.

Herremans, D., Sørensen K., Martens, D. *Dance Hit Song Science, Workshop on Music and Machine Learning (MML)*, ECML/PKDD 2013, Prague, Czech-Republic September 23, 2013

2012 Herremans D., Sørensen K. *Composing counterpoint musical scores with variable neighborhood search*. Annual Conference of the Belgian Operation Research Society (ORBEL26). Université Libre de Bruxelles, Brussels, Belgium, Feb 2–3, 2012.

COURSES TAUGHT

Please note: guest lectures and seminars are listed in the previous section.

2017-... Courses taught at Singapore University of Technology and Design

- Computational Data Science (2018)
- Game Design (2018)
- Capstone (2018)
- Database Management Systems (including Big Data technologies) (2017)

2010–2015 Courses taught/assisted at the University of Antwerp, Belgium

- Technological Project Management
- Seminar Applied Mathematics (Matlab)
- Supply Chain Management
- Operations Management
- Total Quality Management
- Integration Project Business Engineering. Selection of projects supervised:
 - Red Cross Belgium: development of an electronic logbook
 - Creative writing (ngo): Consulting project on implementing a new CRM system.
 - Nekka Nacht (music festival in Belgium): Marketing research on the topic of senior citizens and music
 - Nekka Nacht: creating a marketing plan for rejuvenating the image
 - Rollout of Hollaback Belgium: mobile App that aims to end street harassment

2006–2008 Courses taught at Les Roches, Switzerland

- 3D Computer Animation (newly designed course) (MBA programme)
 - Principles of Computer Applications (Bachelor students)
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SUPERVISION OF PHD STUDENTS

Graduated **Singapore University of Technology and Design**

- Natalie Angus. 2018. *Binaural Auralization*, co-supervisor: Dr. Simon Lui.
Funded by the Ministry of Education (MOE)

2017-current **Singapore University of Technology and Design**

- Zou Yanzhao
Funded by the Ministry of Education (MOE)
- Yin-Jyun Luo
SUTD / A*STAR - Funded by Singa
- En Yan Koh
Funded by the Ministry of Education (MOE)
- Yeo Sue-Mae
Funded by the Ministry of Education (MOE)
- Abigail Leon: Underwater Acoustics Communication
SUTD / Thales - Funded by IPP-EDB

2015–current **Queen Mary University of London, UK**

- Janis Sokolovskis: New Technologies for Piano Learning
Funded by Yamaha R&D London, co-supervisor together with Prof. dr. Elaine Chew

JURY MEMBER OF PHD COMMITTEES

2018 **Singapore University of Technology and Design**

- Hans Ivander: 'Efficient Room Acoustic Modeling' – Final Thesis Committee (2018)
- Atima Tharatipyakul: Preliminary Exam Committee Member (2018)
- Nguyen Thi Ngoc: TEC member, Qualifying & Preliminary Exam Committee Chair (2018)
- Katherine Fennedy Mety: TEC member, Qualifying & Preliminary committee Members
- Lucas Hui Yau Wai, Qualifying committee Member (2019)
- Sakshi Sunil Udeshi, Qualifying committee Member (2019)
- Thilini Cooray: Qualifying Exam committee Member (2018)

SUPERVISION OF MASTERS THESES

2015–2017 **Queen Mary University of London, UK**

- Generating music for computer games (Li Tang)
- A guitar fingering algorithm (Kairan Liao)

2010–2015 **University of Antwerp, Belgium**

- A variable neighbourhood search algorithm to generate piano fingerings for polyphonic sheet music (Matteo Baliauw)
 - won ORBEL award best Master thesis in Operations Research Belgium 2014
 - nominated for Pop Music Thesis Award 2014
 - resulted in publications in “International transactions of OR” and “Lecture notes in computer science”
- Data mining & music - Hit prediction (Tom Bergmans)
 - nominated for Pop Music Thesis Award 2014
 - journal publication currently in writing phase
- Generating neoclassical guitar music with metaheuristics (Max Hein)
- Supply chain management and vendor managed inventory (Malco Cambula)
- Visualizing the evolution of alternative hit songs over time (Wim Lauwers)
 - conference paper currently in (internal) editing phase
- Developing a cello fingering algorithm (Dries Van Overloop)

WORKSHOPS, DOCTORAL COURSES AND SUMMER SCHOOLS

- 2016 ZiF Workshop – From Computational Creativity to Creativity Science – Center for Interdisciplinary Research, Bielefeld University, Germany
- 2016 Dagstuhl Seminar – Computational Music Structure Analysis, Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Germany
- 2015 Lorenz Workshop – Music Similarity: Concepts, Cognition and Computation, Leiden, The Netherlands
- 2014 Workshop Deep Learning – 2-day workshop on Deep Learning for Sound and Music Processing, Austrian Research Institute for Artificial Intelligence (OFAI), Vienna, Austria
- 2014 Computational Music Analysis – *The Sound and Music Computing Summer School*, Athens, Greece – **Funded by FWO travel grant**
- 2013 Advanced Data Mining – (greatest distinction) with Prof. Dr. D. Martens, *University of Antwerp*, Antwerp, Belgium
- 2011 Optimization: Special Topics – (distinction) with Prof. Dr. F. Spieksma, *KULeuven*, Leuven, Belgium
- 2010 Advanced Optimization Techniques – (greatest distinction) with Prof. Dr. K. Sörensen, *University of Antwerp*, Antwerp, Belgium

COMPUTER SKILLS

Systems Linux (UNIX), Mac, Windows.

Applications Familiar with most common applications.

Statistical JMP, SPSS, R, Weka,...

Languages C, C++, Java, Python, Android, Matlab, Bash, PHP, Unity, C#, HTML & CSS, Pascal, SQL, L^AT_EX,...

IN THE PRESS (EXTERNAL)

(Click the title to view the original item)

Press articles

- Channel News Asia Documentary: Algorithms: Ep. 1 Rage Against The Machine. Featuring Morphheus music generation algorithm. 15/10/2018.
- A Machine Successfully Predicted the Hit Dance Songs of 2015, *Motherboard*, *Vice.com*, 17/12/2015.
- The science behind chart success, *Flanders Today*, 12/12/2014.
- Dancehits almaar sneller en luider, *Nieuwsblad*, 23/11/2014.
- Universiteit Antwerpen ontwikkelt een app om hits te herkennen, *De Standaard*, 23/11/2014.
- Onderzoek Antwerpen “Een grappige tool, dat wel”, *Gazet Van Antwerpen*, 23/11/2014.
- Software maakt piano spelen voortaan een stuk makkelijker, *Knack*, 8/9/2014.
- Software als hulpmiddel om pianostukken in te studeren, *Metro*, 08/09/14.
- App genereert oneindige muziek van bekende componisten, *De Standaard*, 21/02/2013.
- Oneindig klassieke muziek van bekende componisten dankzij Belgische app, *De Morgen*, 21/02/2013.
- Ga Beethoven achterna met nieuwe Fux-app, *Gazet Van Antwerpen*, 21/02/2013.
- App genereert oneindige muziek van grote componisten, *Knack*, 21/02/2013.

Radio

- Comment prédire qu'une chanson sera un tube?, *France Info (radio interview)*, 23/11/2014.
- FuX-app genereert muziek in de stijl van Bach, Beethoven en Haydn, *Interview Radio 2*, 23/02/2013.

TV

- Op een wetenschappelijk verantwoorde manier te weten komen of je een dance-hit hebt gemaakt of niet?, *Talkshow: Reyers Laat*, 01/12/2014.
- App voorspelt of nummer hit wordt, *VTM tv-news*, 22/11/2014.
- Beethoven met een streepje Bach?, *CampusTV*, 6/11/2013.

APPOINTMENTS AND COMMITTEE MEMBERSHIPS

Guest editor:

- Neural Computing and Applications (Springer) - Special issue on deep learning for music and audio

Appointments:

- Joint appointment – Institute of High Performance Computing, A*STAR
- NVIDIA Deep Learning Instructor – NVIDIA Deep Learning Academy
- Technical advisor – Musiiio

Committees:

- Undergraduate committee, Singapore University of Technology and Design. 2017-current. – I am in charge of international programmes
- DBS/SUTD Steering Committee
- International programmes representative
- Capstone committee, Singapore University of Technology and Design. 2017.
- Elected member of Faculty Council of Department of Applied Economics, University of Antwerp. 2013-2015.

Senior Member of the Institute of Electrical and Electronics Engineers (IEEE)

Organizing & program committee member

- Co-organizer of International Workshop on Deep Learning for Music (together with Prof. dr. Ching-Hua Chuan, UNF). Workshop held in conjunction with the International Joint Conference on Neural Networks (IJCNN) in Anchorage (May 14-18th, 2017)
- Organizing committee member of the Music Research Symposium at A*STAR, 2nd February 2018.
- Organizing committee member of ORBEL29: 29th Belgian Conference on Operations Research
- Program committee member of the International Conference on Mathematics and Computation in Music (MCM)
- Program committee member of the International Society of Music Information Retrieval (ISMIR)
- Program committee member of the International Conference on Principle and Practice of Constraint Programming (CP). 2015-current.
- Program committee member of the International Workshop on Music and Machine Learning MML (part of ECML/PKDD)
- Program committee member of the International Workshop on Cognitive Robotics and Computational Creativity (part of IEEE Conference on Robotic Computing)
- Program committee member of the International Workshop on Deep Learning and Music (part of IJCNN)
- Program committee member of the Conference on Computer Simulation of Musical Creativity
- Program committee member of the International Conference on Orange Technologies (2017)
- Program committee member of NIPS workshop on Machine Learning for Audio (2018)

OTHER ACADEMIC & RESEARCH SERVICE

Reviewer:

- European Journal of Operations Research (EJOR)
- Expert Systems With Applications
- ACM Transactions on Intelligent Systems and Technology
- IEEE/ACM Transactions on Audio, Speech and Language Processing
- IEEE Transactions on Multimedia
- IEEE TENCON
- Journal of New Music Research
- Knowledge Based Systems
- Journal of New Music Research
- Computer Music Journal
- Journal of Mathematics and Music
- International Conference on Fuzzy System and Data Mining (FSDM)
- International Workshop on Musical Metacreation (MUME)
- Springer book on Computational Music Analysis

Member of Athena Swan (QMUL) program by the Equality Challenge Unit to advance women's careers and promote equality in Science, Engineering, Maths and Medicine.

Developer of website of the ANT/OR research group (antor.uantwerpen.be) and the ORBEL29 conference website (orbel.be)

Mentor in WIMIR mentorship programme for Women in Music Information Retrieval

Panel Member: ASyMMuS Workshop on Audio-Symbolic Music Similarity Modelling, British Library, London, July 8th 2015.

Panel Member: Women in Data Science Conference, Singapore, Panel on Women in Music and Research. April 11th 2018.

LANGUAGE KNOWLEDGE

	Spoken	Written
Dutch	native	native
English	near native	near native
French	near native	near native
German	very good	good
Spanish	fair	fair

REFERENCES

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