

## Gissel Velarde, Ph.D. Ing.

Professor of Artificial Intelligence, IU

CONTACT: <https://gvelarde.com>

**Ph.D.** in Computer Science & Engineering, **Machine Learning**, Aalborg University

**23** years in Computer Science & Engineering (since 2000)

**AI & Machine Learning** (since 2003)

Teaching (since 2005), Supervising (since 2012)

**26** Grants, honors & awards

**6** Books + **15** Peer-reviewed Publications + Several other Publications

**22** Certifications in AI, Machine Learning, & Engineering

**3** Languages: English, Spanish, German.

### RESEARCH INTERESTS:

Artificial Intelligence, Machine Learning, Data Science, Deep Learning, Convolutional Neural Networks, Music Information Retrieval, Recommendation Systems, Computational Creativity, Evaluation, Forecasting, Risk Assessment, Anomaly & Fraud Detection, Perception & Cognition.

### EDUCATION

01/10/2012-  
06/04/2017

#### **Ph.D. in Computer Science and Engineering**

[Aalborg University, Denmark](#)

Europe's best Engineering University. See: [news.aau.dk/news/aau-europe-s-best-engineering-university.cid495153](https://news.aau.dk/news/aau-europe-s-best-engineering-university.cid495153)

See also: <https://www.usnews.com/education/best-global-universities/engineering?region=europe>

(Funded by the Department of Architecture, Design and Media Technology, Aalborg University and partially funded by the EC-Project, FET grant number 610859)

Thesis Title: *Convolutional Methods for Music Analysis*. Machine Learning-based. Supervisors: David Meredith and Tillman Weyde.

01/09/2006-  
29/02/2008

#### **MSc in Electronic Systems and Engineering Management**

[University of Applied Sciences, FH Südwestfalen, Soest, Germany](#)

(Funded by the German Academic Exchange Service (DAAD)).

Project title: *Contributions to the analysis of welding parameters and quality data for the purpose of parameter optimization, trend analysis and preventive maintenance of special welding machines*, Hugo MIEBACH GmbH. Supervisor: Christine Kohring Score: B

01/02/2000-  
01/12/2004

#### **Lic Systems Engineering** (Licenciatura en Ingeniería de Sistemas, 10-Semester Program)

[Universidad Católica Boliviana, La Paz, Bolivia](#)

Third best university in Bolivia according to the [Webometrics](#) Ranking 2020.

Thesis title: *Wavelet Model for Patterns and Singularities Detection in ERP P300 Signal of Alzheimer's Disease*. Supervisor: Roberto Carranza. Score: 100/100

## CAREER SINCE GRADUATION

- 1/2024-  
Present **Professor of Artificial Intelligence**  
**International University of Applied Sciences GmbH.** Research and Teaching.
- 1/11/2023-  
1/2024 **Academic Lecturer in Artificial Intelligence**  
**International University of Applied Sciences GmbH.** Research and Teaching.
- 16/11/2021-  
31/10/2023 **Senior Expert Data Scientist**  
**Vodafone.** Business Intelligence Lead. Tasks: Research, Programming, Supervision, Product Execution, Coordination with diverse Teams and Departments. Areas: Data Science, Artificial Intelligence, Machine Learning, Deep Learning, Anomaly Detection, Fraud Detection, Forecasting. Responsibilities: Since 1/2/2022, leading the Analytics Team. Guiding 5 Data Scientists in the development of Forecasting models. In addition, since 1/5/2022, leading the Fraud Detection Team. Expert Lead in a Team of 12 Data Scientists and Engineers in the development of Fraud Detection and Risk Assessment models. See: Fraud Detection Systems: Evaluating XGBoost for Balanced and Highly Imbalanced Data, GTC, March 23, 2023. <https://www.nvidia.com/gtc/session-catalog/?tab.day=20230323&search=#/session/1665741940906001a0N9>  
Video: <https://youtu.be/nK8zzHLhntc>
- 1/09/2020-  
11/2021 **Docente**  
**Universidad Privada Boliviana.** Tasks: Teaching Artificial Intelligence, Machine Learning, Deep Learning in the Computer Systems Engineering Department to seventh, eighth and ninth-semester students. Online Lectures: 64 contact hours per module. Method: Problem-Based Learning. [www.upb.edu/en](http://www.upb.edu/en)
- 15/03/2018-  
31/01/2019 **Machine Learning Lead / Software developer**  
**Moodagent A/S,** Copenhagen, Denmark. Areas: Recommendation systems. Tasks: Supervision, research, planning, and development. Guiding a team of 3 machine learning engineers in projects for music and media recommendations systems, including deep learning classification models for media, representation learning, and clustering. Evaluation of ranking and recommendation systems. Coordinating product development with other departments. [www.moodagent.com](http://www.moodagent.com)
- 16/10/2017-  
18/01/2018 **Consultant**  
**SONY Computer Science Laboratories,** Paris, France. Contract on the development of Computational Creativity algorithms commissioned by SONY Computer Science Laboratories. [www.csl.sony.fr](http://www.csl.sony.fr)
- 01/10/2012-  
01/11/2016 **PhD fellow**  
**Aalborg University,** Department of Architecture Design and Media Technology, Aalborg, Denmark. Tasks: Research and teaching. [www.create.aau.dk](http://www.create.aau.dk)

- 1/4/2012-  
30/8/2012 **IT-Expert.**  
**Hugo Miebach GmbH**, Welding Machines Division, Dortmund, Germany. Tasks: ERP and Oracle databases management and development. [miebach.de/schweissmaschinen](http://miebach.de/schweissmaschinen)
- 1/8/2008-  
31/07/2010 **Data analyst**  
**Hugo Miebach GmbH**, Welding Machines Division, Dortmund, Germany. Analysis of welding parameters. Tasks: Databases and data analysis. Development of a system for the analysis and optimization of welding parameters, trend analysis and preventive maintenance of special welding machines. [miebach.de/schweissmaschinen](http://miebach.de/schweissmaschinen)
- 01/11/2005-  
30/04/2006 **Technical Consultant IT Solutions.**  
**HANSA Ltda**, IT & Communications Division. Tasks: IT Projects based on Oracle databases. [www.hansa.com.bo](http://www.hansa.com.bo)
- 01/6/2005-  
30/10/2005 **DotNetNuke Developer.**  
**UNDP**, IDH Human Development Inform, Bolivia. Website development. [www.bo.undp.org/](http://www.bo.undp.org/)

#### PROJECTS

- 01/06/2015-  
30/3/2016 **Research Member** of the EC-funded collaborative project, “Learning to Create” (Lrn2Cre8). Funded by the Future and Emerging Technologies (FET) programme within the Seventh Framework Programme for Research of the European Commission, under FET grant number 610859. Developing machine learning based models for music analysis, pattern discovery, and classification. [cordis.europa.eu/project/rcn/109697\\_en.html](http://cordis.europa.eu/project/rcn/109697_en.html)
- 2020-  
Present **Principal Investigator.** Urubo Institute of Technology. [www.urubo.org](http://www.urubo.org). The project aims to build a world-class research institute where work, leisure, and well-being complement each other harmoniously with technology, nature, and society.
- 2022-  
Present **Research Lead.** Instituto de Inteligencia Artificial, Universidad Privada Boliviana, Bolivia.

#### SKILLS

Machine Learning, AI, Data Science, Research, Project Management, Programming.  
Excellent oral and written communication skills.  
**Programming:** Python, TensorFlow, Keras, XGBoost, Relational DB

## CERTIFICATIONS (22):

20/3/2023	Applications of AI for Anomaly Detection. NVIDIA DLI Certificate <a href="https://courses.nvidia.com/certificates/bc41fc22odd9470299601aa762f99bod/">https://courses.nvidia.com/certificates/bc41fc22odd9470299601aa762f99bod/</a>
08/10/2019	Scalable Machine Learning on Big Data using Apache Spark. <a href="https://coursera.org/verify/3MDVE7QEHM29">coursera.org/verify/3MDVE7QEHM29</a>
09/2019	TensorFlow in Practice specialization. <a href="https://coursera.org/verify/HWZYCKXFEQCC">coursera.org/verify/HWZYCKXFEQCC</a>
23/09/2019	Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning. <a href="https://coursera.org/verify/CD8YLYU54YDW">coursera.org/verify/CD8YLYU54YDW</a>
24/09/2019	Convolutional Neural Networks in TensorFlow. <a href="https://coursera.org/verify/5B8ZPR7D66HX">coursera.org/verify/5B8ZPR7D66HX</a>
24/09/2019	Natural Language Processing in TensorFlow. <a href="https://coursera.org/verify/JYBZB93B5U5T">coursera.org/verify/JYBZB93B5U5T</a>
23/09/2019	Sequences, Time Series and Prediction. <a href="https://coursera.org/verify/VL3D7J6CY8WB">coursera.org/verify/VL3D7J6CY8WB</a>
Fall, 2015	Deep Learning, Aalborg University Certificate, 1 ECTS PhD course
Fall, 2015	Writing Interpretative Research Papers, Aalborg University Certificate, 3 ECTS PhD course
Fall, 2015	Multivariate Data Analysis, Aalborg University Certificate, 2 ECTS PhD course
Spring, 2015	Mathematical Kaleidoscope II, Aalborg University Certificate, 2 ECTS PhD course
Spring, 2015	Library Information Management, Aalborg University Certificate, 1 ECTS PhD course
Spring, 2015	Professional Communication, Aalborg University Certificate, 2.5 ECTS PhD course
Spring, 2015	Management of Research and Development, Aalborg University Certificate, 2.5 ECTS PhD course
Fall, 2014	Advanced Mathematics for PhD Candidates in the Engineering Sciences: Analysis and Topology, Aalborg University Certificate, 3 ECTS PhD course
Spring, 2013	Machine Learning, Aalborg University Certificate, 3 ECTS PhD course
Spring, 2013	Professional Networking, Aalborg University Certificate, 1 ECTS PhD course
Spring, 2013	Introduction to PhD study, Aalborg University Certificate, 1 ECTS PhD course
Fall, 2012	Patenting, Commercialization and Entrepreneurship, Aalborg University Certificate, 1 ECTS PhD course
Fall, 2012	Study Group on Business Intelligence, Aalborg University Certificate, 2 ECTS PhD course
Fall, 2012	Predictive Database Systems, Aalborg University Certificate, 2 ECTS PhD course
10/02/2006	Oracle 9i Technical Champion Skills, 82%.

## LANGUAGE STUDIES

1999-2001	English Studies: Centro Boliviano Americano CBA, La Paz. MTELP-Michigan Test of English Language Proficiency. TOEFL Internet-based Test. Score: 97/120. Taken in 2012.
2004	German Studies: Goethe Institut La Paz, Basic Level. Goethe Institut Berlin, Medium. Zertificat ZD - Zertificat Deutsch. Score: 257/300. Taken in 2004.

Grants, honors & awards (26)

- 2023 Finalist in the categories: AI & Data Science Leader of the Year Award. Global Awards 2023 WomenTech Network. <https://www.womentech.net/nominee/Gissel/Velarde/96918?fbclid>.
- 2023 Runner Up Team in the Growth Category for our topic on “Machine Learning Empirical Evaluation” at the Award’s Ceremony 2023, Vodafone’s Global D&A and Technology Forum.
- 2023 Vodafone Star Award in the category: Experiment, learn fast. March 2023. The knowledge generated from development of a detection system to prevent fraud and mitigate risk was estimated to potentially save Vodafone a million Euros per year.
- 2022 Vodafone Star Award for the Q1 winning submission entitled: Implementing a Successful AI and Machine Learning Strategy. Issued by Vodafone Group D&A Leadership, Jul 2022
- 2021 Finalist in the category: Global AI Inclusion Award. GlobalTech Network. <https://www.womentech.net/nominee/Gissel/Velarde/64450>
- 2021 Teaching Award: “Docente Buho Innovador Invitado” by Universidad Privada Boliviana. (Minute 30:10) <https://fb.watch/6oe7V-d8tH/>. [https://gvelarde.com/blog/UPB\\_Award.html](https://gvelarde.com/blog/UPB_Award.html)
- 2020 Named “Notable Woman in the field” by the Committee promoting diversity, International Society for Music Information Retrieval. [wimir.wordpress.com](http://wimir.wordpress.com)
- 2019, 2020 & Selected to join the Top Women Tech Summit in Brussels.  
2022
- 08/2016 Women in MIR (WiMIR) Grant supporting female first or supporting authors of accepted full papers at the 17th International Society for Music Information Retrieval Conference in New York.
- 01/10/2012- Scholarship for the PhD program of the Faculty of Engineering and Science awarded  
02/11/2016 by the Department of Architecture, Design and Media Technology, Aalborg University
- 14/07/2010 Nominated for Best Paper Award for the talk “Dynamic Pattern Extraction of Parameters in Laser Welding Process”, at the Industrial Conference on Data Mining, Berlin, Germany
- 1/9/2006- DAAD (Deutscher Akademischer Austausch Dients) Scholarship in MSc. Electronic  
29/2/2008 Systems and Engineering Management at FH Sudwetfalen University of Applied Sciences, Soest, Germany
- 14/10/2005 Honor Diploma to have obtained an excellent qualification in her Thesis, Systems Engineering program, Faculty of Exact Sciences and Engineering, Universidad Católica

Boliviana, La Paz, Bolivia

- 10-12/2004 German Course Scholarship, Goethe Institut, Berlin, Germany
- 07/1999 Summer Stage Scholarship, Classical and Jazz music masterclasses, Academie Internationale d' Eté de Wallonie, Libramont, Belgium
- 1995 & 2002 Scholarship at the Conservatorio Plurinacional de Música, La Paz, Bolivia.
- 1994 & 1997 First and second prizes in the IV and VII National Competition of Piano "Abril en Tarija", respectively, Tarija, Bolivia.
- 1993, 1998 & 2002 Prize "Prof. Fanny Salgueiro Ch.", granted by The Conservatorio Plurinacional de Música and the Succession Prof. Fanny Salgueiro Chavarria. Best regular student in her category and instrument, La Paz, Bolivia.
- 1994, 1996 & 2001 Honor Diploma granted by the Conservatorio Plurinacional de Música and the National Secretary of Culture, La Paz, Bolivia.
- 1986 First prize, first category. Painting contest. Subsecretary of Maritime, Fluvial and Lacustrine Interests in its V Anniversary, La Paz, Bolivia.

#### COMPLETED PEDAGOGICAL COURSES:

- 1999 Psychopedagogy of art (Psicopedagogía del arte), taken at the Conservatorio Plurinacional de Música, La Paz. Annual system. Score: 90/100.
- 2002 Interactive pedagogy and creativity (Pedagogía interactiva y creatividad.), taken at the Universidad Católica Boliviana, La Paz. Semestral system. Score: 94/100.

#### ART STUDIES

- 1990-2002 Conservatorio Plurinacional de Música, La Paz, Bolivia
- 07/1999 Academie Internationale d' Eté de Wallonie, Music Stage, Libramont, Belgium
- 1988-1996 Ballet Expresión and Escuela del Ballet Oficial, La Paz, Bolivia

#### TEACHING EXPERIENCE

- 2023-Present **International University of Applied Sciences GmbH.**  
Teaching several courses in the Bachelor and Master Programms in Artificial Intelligence and Data Science.
- Artificial Intelligence, Bachelor (English and German)
  - Artificial Intelligence, Bachelor (German)

- Project Edge AI, Bachelor
- Deep Learning, Bachelor
- Seminar: Current Topics in AI, Master
- Seminar: Current Topics in Data Science, Master

2020-2021

**Universidad Privada Boliviana.** [www.upb.edu/en](http://www.upb.edu/en)

Docent in the Five-year program of Computer Systems Engineering.

- Fall-2020 and Fall-2021: **Selected topics in Artificial Intelligence.** Semester 7th. 64 contact hours per module (Module Responsible). Lecture using Problem-Based Learning. Supervised projects: Contents: History of AI. Intelligence and Artificial Intelligence. What is Machine Learning (ML)? Basic concepts, classes, features, labels, data representation. Scenarios: supervised learning, unsupervised learning, reinforcement, learning. Data processing. Bayesian decision theory. Support vector machines, Clustering: K-means, Hierarchical clustering. Design and analysis of experiments in ML. Deep Learning, history. CNNs, convolution, brain processes. Perception. Deep learning algorithms. *Assessment:* Divided into three evaluations based on course work, and oral exams. Scores on a scale 0 to 100 points.
- Spring-2021: **Applied Artificial Intelligence.** Semester 7th. 64 contact hours per module (Module Responsible). Lecture using Problem-Based Learning. Contents: Problem Based Learning (PBL). History of neural networks. Scenarios: supervised learning, unsupervised learning, reinforcement learning. Training, testing and evaluation. Convolution, brain processes. Convolutional Neural Networks CNNs. Bias in design of experiments. Horse models. Experimentation strategy. Algorithm performance measurement. Commercial opportunities. Canvas model. Presenting a business model. AI startups. *Assessment:* Divided into three evaluations based on course work, and oral exams on a scale 0 to 100 points.
- Spring-2021: **Neural Networks.** Optional. Prerequisite: Artificial Intelligence. 32 contact hours per module (Module Responsible). Lecture using Problem-Based Learning. Contents: Convolutional Neural Networks CNNs, filters, architectures, padding. Deep Networks, Gradient-based learning, back-propagation, learning rate. Regularization for deep learning, data augmentation, early stopping, dropout. Sequence modeling, LSTMs, RNNs. Representation learning, transfer learning. Generative models. Bias in data sets. Bias in design of experiments. Clever Hans models. Experimentation strategy. Algorithm performance measurement. Hypothesis testing. Binomial test, normal test approximation. t-test. Comparing AI algorithms. Benchmarking. Commercial opportunities. *Assessment:* Divided into three evaluations based on course work, and oral exams on a scale 0 to 100 points.

2013-2016

**Aalborg University**. [www.create.aau.dk](http://www.create.aau.dk)

Supervision of student projects in the Medialogy Bachelor program in the following courses:

- Spring-2013: **Sonic interactions: Design and Evaluation**  
Semester 4th. (15 ECTS) (Main Responsible) Sonic design and computing, multimedia interaction, implementation. Supervised projects: Koldinghus Castle Chapel - Interactive 3D soundscape. Use of Fundamental Frequency Estimation in an Edutainment Based Tool.
- Spring-2015: **Interactive Systems Design**  
Semester 6th. (20 ECTS) (Main Responsible) Interactive and multimodal interfaces, haptic interfaces, visualization, input and output devices, analysis of data. Supervised project: Active Audio: Interactive Visual Sounds.
- Fall-2015: **Designing from Both Sides of the Screen**  
Semester 1st. (10 ECTS) (Main Responsible) Object-oriented programming to design and implement and interactive solution. Supervised project: Keeping memories with digital diaries.

*Assessment type:* "Individual oral examination with external censor based on a written project report and a media-technological product plus an A/V-production that illustrates and summarizes the project. The assessment is performed in accordance with the 7-point grading scale." Curriculum for the Bachelor's Program in Medialogy (Medialogi), September 2010. The Faculty of Engineering and Science, Aalborg University, 2010.

Teaching assistant in the Master of Science program of Sound and Music Computing:

- Fall-2014: **Music Perception and Cognition**  
(5 ECTS) (Main responsible: Cumhur Erkut) Introduction, Perception: time and pitch, cognition, modeling, performance and embodied music cognition, meaning, emotions, culture.
- Fall-2015: **Music Perception and Cognition**  
(5 ECTS) (Main responsible: Sophia Dahl) Introduction, Scope, basic definitions, and big questions, streams and melody, tempo, meter, pulse, models, music performance, music and emotion, practical issues, musical illusions.

*Modeling session:* From perception to cognition modeling. A practical session modeling with the MIDI-Toolbox. *Contents:* Mini-projects, Installation, Basic operations: Manipulating note matrices, Examples: Visualizing the MIDI data, Melodic contour, Key-Finding, Meter-Finding, Melodic Segmentation, Melodic



Expectations, Melodic Complexity, Analyzing MIDI Collections, Creating sequences.

*Assessment type:* Oral examination with an internal censor, in accordance with the 7-point grading scale. Curriculum for the Master of Science in Sound and Music Computing, September 2014. The Faculty of Engineering and Science, The Study Board of Media Technology, Aalborg University, 2014.

- 2006 Escuela Militar de Ingeniería, La Paz, Matlab workshop. 20 contact hours. Workshop Responsible.  
*Content:* Introduction to Matlab, basic instructions, manipulating matrices, Matlab's Graphical User Interface (GUI).  
*Assessment type:* Participation.
- 2005-2006 Conservatorio Plurinacional de Música, La Paz, Workshops on improvisation and movement. Main Responsible.  
*Assessment type:* Participation.
- 2005 Conservatorio Plurinacional de Música, La Paz, piano teacher at the basic level and as piano as second instrument.  
*Assessment type:* Individual examination with a jury.

## Publications (25)

## Books

- [1] Velarde, G. (2023). *Artificial Era: Predictions, Problems, and Diversity in AI*. Oxford University Press. ISBN: 9780192869777 <https://global.oup.com/academic/product/artificial-era-9780192869777?cc=us&lang=en&>
- [2] Velarde, G. (2021). *Künstliches Zeitalter: Vorhersagen für Ultramenschen, Roboter und andere intelligente Wesen* (Übersetzer von Sophie Wöllbling). Düsseldorf: PRICA. ISBN: 978-3948861032. [amazon.de/dp/394886103X](https://amazon.de/dp/394886103X)
- [3] Velarde, G. (2021). *Era artificial: Predicciones para ultrahumanos, robots y otros entes inteligentes*. Düsseldorf: PRICA. 978-3948861087. [amazon.com/dp/3948861080](https://amazon.com/dp/3948861080)
- [4] Velarde, G. (2020). *A 4.0 Artificial Intelligence strategy in Bolivia*. Düsseldorf: PRICA. ISBN: 978-3948861001. [amazon.com/dp/3948861005](https://amazon.com/dp/3948861005)
- [5] Velarde, G. (2020). *Una estrategia 4.0 de inteligencia artificial en Bolivia*. Publicación independiente. ISBN: 978-9917003335. [amazon.com/gp/product/9917003339](https://amazon.com/gp/product/9917003339)

## PHD DISSERTATION

- [6] Velarde, G. (2017). *Convolutional Methods for Music Analysis*. PhD Dissertation. Aalborg University Press. ISBN: 978-87-7112-887-1. [vbn.aau.dk/ws/portalfiles/portal/316451205/PHD\\_Gissel\\_Velarde\\_E.pdf](https://vbn.aau.dk/ws/portalfiles/portal/316451205/PHD_Gissel_Velarde_E.pdf)

## ALGORITHM SUBMITTED TO THE MUSIC INFORMATION RETRIEVAL EVALUATION EXCHANGE (MIREX)

- [7] Velarde, G. and Meredith, D. (2014). A wavelet-based approach to the discovery of themes and sections in monophonic melodies. Music Information Retrieval Evaluation Exchange (MIREX 2014), Competition on Discovery of Repeated Themes and Sections, 27-31 October 2014, Taipei, Taiwan. [vbn.aau.dk/ws/portalfiles/portal/205643557/VM.pdf](https://vbn.aau.dk/ws/portalfiles/portal/205643557/VM.pdf) Poster: <http://gvelarde.com/Press/Poster-MIREX-VM-2016> Mirex page: [https://www.music-ir.org/mirex/wiki/2014:Discovery\\_of\\_Repeated\\_Themes\\_%26\\_Sections\\_Results](https://www.music-ir.org/mirex/wiki/2014:Discovery_of_Repeated_Themes_%26_Sections_Results)

## PEER-REVIEWED JOURNAL PAPERS, PROCEEDINGS AND BOOK CHAPTERS

- [8] Velarde, G., Weichert, M., Deshmunkh, A., Deshmane, S., Sudhir, A., Sharma, K., and Joshi, V. (2024). Tree boosting methods for balanced and imbalanced classification and their robustness over time in risk assessment. *Intelligent Systems with Applications*, 200354. <https://doi.org/10.1016/j.iswa.2024.200354>

- [9] Sossi-Rojas, S., Velarde, G., and Zieba, D. (2023) A Machine Learning Approach For Bitcoin Forecasting. *Eng. Proc.* 2023, 39(1), 27. The 9th International conference on Time Series and Forecasting. ITISE July 12–14, 2023, Canaria, Spain <https://doi.org/10.3390/engproc2023039027>
- [10] Velarde, G. Sudhir, A., Deshmane, S., Deshmunkh, A, Sharma, and K, Joshi, V. (2023) Fraud Detection Systems: Evaluating XGBoost for Balanced and Highly Imbalanced Data, GTC, March 23, 2023. <https://arxiv.org/pdf/2303.15218.pdf>, <https://www.nvidia.com/gtc/session-catalog/?tab.day=20230323&search=#/session/1665741940906001a0N9>  
Video: <https://youtu.be/nK8z2HLhntc>
- [11] Velarde, G., Branez, P., Bueno, A., Heredia, R., and Lopez-Ledezma, (2022). An Open Source and Reproducible Implementation of LSTM and GRU Networks for Time Series Forecasting. *Engineering Proceedings*. 18(1):30. <https://doi.org/10.3390/engproc2022018030>. Presentation: <https://youtu.be/XmW2xwmKXHg>  
Code: <https://github.com/Alebuenoaz/LSTM-and-GRU-Time-Series-Forecasting>.
- [12] Velarde, G., Branez, P., Bueno, A., Heredia, R., and Lopez-Ledezma, (2022). An Open Source and Reproducible Implementation of LSTM and GRU Networks for Time Series Forecasting. The 8th International conference on Time Series and Forecasting. ITISE June 27–30, 2022, Canaria, Spain Presentation: <https://youtu.be/XmW2xwmKXHg>  
Code: <https://github.com/Alebuenoaz/LSTM-and-GRU-Time-Series-Forecasting>.
- [13] Joseph Turian, Jordie Shier, Humair Raj Khan, Bhiksha Raj, Bjorn W. Schuller, Christian J. Steinmetz, Colin Malloy, George Tzanetakis, Gissel Velarde, Kirk McNally, Max Henry, Nicolas Pinto, Camille Noufi, Christian Clough, Dorien Herremans, Eduardo Fonseca, Jesse Engel, Justin Salamon, Philippe Esling, Pranay Manocha, Shinji Watanabe, Zeyu Jin, Yonatan Bisk (2022). HEAR: Holistic Evaluation of Audio Representations *Proceedings of Machine Learning Research* 176:125?145, 2022 NeurIPS 2021 Competition and Demonstration Track <https://proceedings.mlr.press/v176/turian22a/turian22a.pdf>
- [14] Velarde, G. (2021). Artificial Intelligence Trends and Future Scenarios: Relations Between Statistics and Opinions. *In 2021 IEEE Third International Conference on Cognitive Machine Intelligence (CogMI)*, pp. 64-70. DOI <https://www.computer.org/csdl/10.1109/CogMI52975.2021.00017>
- [15] Velarde, G. (2019). Artificial Intelligence and its impact on the Fourth Industrial Revolution: A Review. *International Journal of Artificial Intelligence & Applications*, 10(6), 41-48. Retrieved from <http://airconline.com/ijaia/V10N6/10619ijaia04.pdf>
- [16] Velarde, G., Cancino Chacón, C., Meredith, D., Weyde, T., and Grachten, M. (2018). Convolution-based Classification of Audio and Symbolic Representations of Music. *Journal of New Music Research*. <https://doi.org/10.1080/09298215.2018.1458885>

- [17] Velarde, G., Weyde, T., Cancino Chacón, C., Meredith, D. and Grachten, M. (2016) Composer Recognition based on 2D-Transformed Piano-Rolls. *ISMIR 2016, The 17th International Society for Music Information Retrieval Conference*. <https://archives.ismir.net/ismir2016/paper/000063.pdf>
- [18] Velarde, G., Meredith, D., and Weyde, T. (2015). A wavelet-based approach to pattern discovery in melodies. In Meredith, D., editor, *Computational Music Analysis*, pages 303–333. Springer. [https://link.springer.com/chapter/10.1007/978-3-319-25931-4\\_12](https://link.springer.com/chapter/10.1007/978-3-319-25931-4_12)
- [19] Velarde, G., Weyde, T., and Meredith, D. (2013). An approach to melodic segmentation and classification based on filtering with the haar-wavelet. *Journal of New Music Research*, 42(4):325–345. <https://doi.org/10.1080/09298215.2013.841713>
- [20] Velarde, G., Weyde, T., and Meredith, D. (2013). *Wavelet-filtering of symbolic music representations for folk tune segmentation and classification*, pages 56–62. Meertens Institute; Department of Information and Computing Sciences; Utrecht University. [https://vbn.aau.dk/ws/portalfiles/portal/210244566/Velarde\\_et\\_al\\_FMA2013\\_vf3.pdf](https://vbn.aau.dk/ws/portalfiles/portal/210244566/Velarde_et_al_FMA2013_vf3.pdf)
- [21] Velarde, G. and Weyde, T. (2012). On symbolic music classification using wavelet transform. In *International Conference on Applied and Theoretical Information Systems Research*. Academy of Taiwan Information Systems Research. August, 2013. An error has been found in the code of the experiment that affects the results shown in tables and figures. <http://atisr.org/conferences>
- [22] Velarde, G. and Binroth, C. (2011). Regression analysis: A good practice for parameter exploration and optimisation in laser welding process. *Welding and Cutting*, 10(5):322–328. <http://www.welding-and-cutting.info>
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#### TALKS (ENGLISH)

- [27] (Speaker) How to Improve Diversity in the Artificial Era. *Stockholm Waterfront Congress Centre, 17 April 2024* <https://womenintech.se/witswe2024/program/>
- [28] (Speaker) AI for Publishers. *Taiwan International Book Fair, February 22, 2024.* <https://youtu.be/yqIpaBG6Ydc?feature=shared>
- [29] (Speaker) Presenting Artificial Era and Angeles. *July 21, 2023.* <https://gvelarde.com/blog/presentation-artificial-era-and-angels.html>
- [30] (Speaker) Webinar "Evaluating XGBoost for balanced and Imbalanced datasets". *GTC, March 23, 2023.* <https://youtu.be/6rBhV7ZtOT0?feature=shared>
- [31] (Speaker) Fraud Detection Systems: Evaluating XGBoost for Balanced and Highly Imbalanced Data [S51129]. *GTC, March 23, 2023.* <https://www.nvidia.com/gtc/session-catalog/?tab.day=20230323&search=#/session/1665741940906001a0N9>
- [32] (Speaker) Optimizing Machine Learning-Based Detection Systems. *Global Conference, May 9-12, 2023.* <https://www.womentech.net/speaker/Gissel/Velarde/79461>
- [33] (Speaker) Woman in Tech: Challenges in a Highly Imbalanced Gender Scenario. *Women in Tech Global Conference, June 7, 2022.* <https://www.womentech.net/en-de/speaker/Gissel/Velarde/68654> Video: <https://www.youtube.com/watch?v=MC3ovfHnRE4>
- [34] (Speaker) Artificial Era: Predictions for Ultrahumans, Robots and other Intelligent Entities. *Women Tech Global Conference, June 8, 2021.* <https://www.womentech.net/speaker/Gissel/Velarde/56821> Video: <https://www.youtube.com/embed/SILGs6R42FM>
- [35] (Panelist) Women, AI, & the power of two together! *WaiDatathon & WaiTalk. Combat Domestic Violence with Data & AI. March 13, 2021.* <https://www.linkedin.com/feed/update/urn:li:activity:6774989739360698368/>
- [36] (Workshop Leader) Music for Good Workshop. *Woman in Music Information Retrieval. Satellite event of the 20th International Society for Music Information Retrieval, 2019. Delf, The Netherlands, November 3, 2019.* <https://youtu.be/y9IX1GtV7lg>

- [37] (Invited Speaker) A Wavelet-Based Approach to the Discovery of Repeated Themes and Sections in Melodies. *Music in the Brain Seminars, Autumn 2014, Aarhus, Denmark. November 27, 2014.*
- [38] (Speakers) Velarde, G. and Meredith, D. (2014). Melodic pattern discovery by structural analysis via wavelets and clustering techniques. Paper presented at the *European Music Analysis Conference, Leuven, Belgium.* <http://www.euromac2014.eu/programme/9a/velarde>
- [39] Velarde, G. and Weyde, T. (2012). Melodic structure and automatic classification in Bach's 2-part inventions. In Abels, B., Grant, M., and Waczkat, A., Editors, *Music | Musics. Structures and Processes.* <https://www.uni-goettingen.de/en/veranstaltungsarchiv/640875.html>
- [40] Velarde, G. and Weyde, T. (2012). The relevance of wavelet representation of melodic shape. Music & Shape Conference, London, UK.
- TALKS (SPANISH)
- [41] (Speaker) La Era Artificial y Angeles. *July 21, 2023.* <https://gvelarde.com/blog/presentation-artificial-era-and-angels.html>
- [42] (Keynote Speaker) Deep Learning. *UPB, April 30, 2022.* <https://youtu.be/yHQI6b-pv2I?t=808>
- [43] (Invited Speaker) ESPECIALES NERD - Episodio III - Inteligencia Artificial. Predicciones en la Era Artificial. *Nerdearla, November 28, 2021.* <https://youtu.be/n-nP-be3Bpo>
- [44] (Invited Speaker) Mujeres en el ecosistema de las tecnologías Inteligentes. *Encuentro Mundial en Big Data - EMBDATA, October 21, 2021.* <https://encuentromundialbigdata.com/2021/conferencista/dra-giselle-velarde/>
- [45] (Speaker) Era artificial: Predicciones para ultrahumanos, robots y otros entes inteligentes. *Talent Land Digital, July 7, 2021.* <https://www.talentland.mx/speakers/gissel-velarde/>
- [46] (Invited Speaker) Ciencia de datos - Machine Learning: Una introducción *Universidad Mayor de San Andrés, June 18, 2021.* <https://youtu.be/W5adVmcomw4>
- [47] (Keynote Speaker) Inteligencia Artificial, innovación, startups, y cómo introducirla en empresas. *Organized by Universidad del Valle, Ingeniería en Sistemas Informáticos & Club de Ciencia de Datos, May 8, 2021.* <https://fb.watch/5oAzqqXa5C/>
- [48] (Invited Speaker) Era Artificial: Predicciones para ultrahumanos, robots y otros entes inteligentes. *Women in Data Science La Paz, May 1, 2021. Min. 1:29:35* <https://fb.watch/5e5tI-c72U/>

- [49] (Keynote Speaker) Revisión del libro Era Artificial. *Book Movement. La Paz, Bolivia, April 3, 2021*. <https://youtu.be/3LkYQdQFdQc>
- [50] (Keynote Speaker) Inteligencia Artificial e innovación para impulsar a Bolivia en el siglo XXI. *Presentación virtual organizada por la Universidad Privada Boliviana, 2020. La Paz, Bolivia, September 9, 2020*. <https://youtu.be/JfgAfV23yZg>
- [51] (Keynote Speaker) Estrategia 4.0 de Inteligencia Artificial en Bolivia. *Presentación virtual organizada por la Universidad Católica Boliviana, 2020. La Paz, Bolivia, May 25, 2020*. <https://youtu.be/JfgAfV23yZg>
- [52] (Keynote Speaker) Impacto de la Inteligencia Artificial en Bolivia, Latinoamérica y el Mundo. *Ciclo de conferencias Industria 4.0, Universidad Privada de Santa Cruz de la Sierra, Bolivia, October 1, 2019*. <https://youtu.be/6vkJRqxt9NU>

## POSTERS

- [53] Okabe, Martínez-Moreno, Ugarte, Bruckner, Velarde. (2021). Genetic Scale Song submitted to the AI Song Contest 2021. <https://www.aisongcontest.com/participants/geneticscale-2021>
- [54] Henderson, Steffensen, Dyrsting, Teglbjærg, Meeus, Jørgensen, Velarde. (2018). Moodagent App: Novel ways of interacting with music streaming content. Poster presented at the 19th International Society for Music Information Retrieval Conference, Paris, France, from September 23-27, 2018. <drive.google.com/file/d/1YK09zySvFgYnLLtCtavBXiLE7cnWosvB/view>
- [55] Velarde, G. and Meredith, D. (2014). A wavelet-based approach to the discovery of themes and sections in monophonic melodies. Music Information Retrieval Evaluation Exchange (MIREX 2014), Competition on Discovery of Repeated Themes and Sections, 27-31 October 2014, Taipei, Taiwan. <https://vbn.aau.dk/ws/portalfiles/portal/205643557/VM.pdf>
- [56] Velarde, G. and Weyde, T. (2012). Wavelet-based melody representation and segmentation for recognition of tune families. Poster presented at DMRN+7: Digital Music Research Network One-day Workshop 2012, London, UK. [c4dm.eecs.qmul.ac.uk/dmrn/events/dmrnp7/](http://c4dm.eecs.qmul.ac.uk/dmrn/events/dmrnp7/)
- [57] Velarde, G. and Weyde, T. (2011). Symbolic melody classification using wavelets. Poster presented at DMRN+6: Digital Music Research Network One-day Workshop 2011, London, UK. [c4dm.eecs.qmul.ac.uk/dmrn/events/dmrnp6/](http://c4dm.eecs.qmul.ac.uk/dmrn/events/dmrnp6/)
- [58] Velarde, G. (2010). Pattern identification in melody via wavelets. Poster presented at International Society for Music Information Retrieval Conference, Utrecht, Holland. [archives.ismir.net/ismir2010/latebreaking/000001.pdf](http://archives.ismir.net/ismir2010/latebreaking/000001.pdf)

## MUSIC SCORES

- [59] Velarde, G. (2023). Piano Music For Ballet Class: Colors in Motion. PRICA, Düsseldorf. <http://gvelarde.com/Press/PiezasOpus6.pdf>
- [60] Velarde, G. (2022). Piano Pieces Opus 7 - Angeles. PRICA, Düsseldorf. [http://gvelarde.com/Press/Velarde\\_PiezasPianoOpus7.pdf](http://gvelarde.com/Press/Velarde_PiezasPianoOpus7.pdf)

## ALBUMS

- [61] Velarde, G. (2011). Angeles. Cdbaby. 884502963397. MP3. [open.spotify.com/album/0zi7bmhoLwEPVbr5AGuCi7](https://open.spotify.com/album/0zi7bmhoLwEPVbr5AGuCi7)
- [62] Velarde, G. (2008). Colores en movimiento. Cdbaby. 884502897579. CD. [open.spotify.com/album/5BU9LAlz27OtP6AKFucZFh](https://open.spotify.com/album/5BU9LAlz27OtP6AKFucZFh)
- [63] Arce Sejas, G. and Velarde, G. (2004). CDI884502963397 Estudio aleatorio no. 3, op. 30: To mr. Joseph. Mca (American Contemporary Music) 002 (700261990460). MP3. <https://open.spotify.com/album/4CfAlKl8y2iXPhmpPazKkQ>. Video: <https://youtu.be/WBe5uNRDDUQ>

## SERVICE

- 2015-Present Reviewing for the International Conference for Music Information Retrieval (ISMIR).
- 2022 Reviewing for the NeurIPS 2022 Competition Track.
- 2022 Reviewing for the International Journal of Human-Computer Interaction.
- 2021 Reviewing for the International Journal of Artificial Intelligence & Applications.
- 2020-2021 Evaluation Committee of the Plurinational Price in Science and Technology Bolivia.
- 2021 Full Committee Member NeurIPS 2021 competition.
- 2019, 2022 Reviewing for the Journal of New Music Research
- 2018 Reviewing for the Computer Music Journal
- 2015 Reviewing for the European Association for Signal Processing Conference (EUSIPCO)
- 2013, 2020 Reviewing for the Journal of Mathematics and Music
- 2017-2018 Mentor of the [Women in Music Information Retrieval](#) program.

## PRESS CLIPPING

- 03/08/2023 Pablo Mendieta Ossio, Publico: [Inteligencia artificial e irracionalidad humana](#)
- 21/06/2023 Johannes Castner: 'The Artificial Era': Bridging AI, Music, Sustainability, and Societal Impact for the Future
- 14/07/2023 La Razon: [Piedra, papel y tinta 14-07-23](#)
- 25/01/2021 eju!: [Gissel Velarde: Es posible que en el transcurso de este siglo la inteligencia artificial llegase a superar ampliamente a los humanos](#)
- 17/01/2021 LadoB: [Era artificial: quienes dominen la tecnologia tendran la ventaja](#)
- 21/12/2014 Jyllands-Posten: [Forskning i musiktemaer](#)



USEFUL LINKS

Linkedin: <https://www.linkedin.com/in/gissel-velarde-b19067151/>

Google Scholar: <https://scholar.google.com/citations?hl=en&user=cPZ8noYAAAAJ>

Amazon: <https://www.amazon.com/?e/Bo85WZL5WB>

Facebook: <https://www.facebook.com/Gissel-Velarde-107573787547530/>

Twitter: <https://twitter.com/VelardeGissel>

Youtube: <https://www.youtube.com/user/GisselVelarde>

Github: <https://github.com/Alebuenoaz/LSTM-and-GRU-Time-Series-Forecasting>

\*Recommendation letters and Certificates upon request.