Marc-André Carbonneau

4690, boul. Saint-Michel
Montreal, Qc, Canada
H1Y 3E3
Phone: 1 438 829 8933
marcandre.carbonneau@gmail.com
personal website

Languages: French & English
Personal Qualities: good communication skills, conscientious, dynamic, autonomous
Research Interest: machine learning, deep learning, speech, signal processing, computer vision
Skills: Python, Pytorch, Java, C, Matlab, VHDL, Electronic and PCB Design

About me:
I currently work at Ubisoft La Forge Lab where I lead a group of researchers on subjects relating to machine learning, speech and sound. We do applied research for the video game industry.

Under my leadership, my team has delivered a complete state-of-the-art speech synthesis solution currently used in production at Ubisoft. We also created a series of tools to automate the post-production of dialog recordings which accelerates by 10x the throughput of our sound engineers.

EDUCATION

DOCTORATE OF PHILOSOPHY (2012-2017)

École de technologie supérieure, Montreal, Canada
Specialization: Machine Learning
Thesis Title: Multiple Instance Learning Under Real-World Conditions
Thesis and defense received the mention "Excellent/Excellent"
Submitted for the "Best Thesis Award"

ELECTRICAL ENGINEERING DEGREE (2000-2010)

École de technologie supérieure, Montreal, Canada
Specialization: Information Technologies

TECHNICIAN DEGREE IN ELECTRONIC CONCEPTION (1997-2000)

Cégep de Trois-Rivières
3-year professional program

WORK EXPERIENCE

RESEARCH SCIENTIST (2017-PRESENT)

Ubisoft Entertainment – Video game studio
I lead a group of researchers on subjects relating to machine learning, speech and sound for videogames.
Tasks:
- Supervise a team of researchers, developers, and students
- Formulate and carry research plans
- Implement deep learning prototype models
- Communicate to the company stakeholders and academic partners
- Write scientific papers
- Mentor young researchers

MACHINE LEARNING CONSULTANT (2013-2017)

Stelpro, ALIA Conseil, Aheeva and Quattriuum

During my Ph.D. studies, I took part in collaboration projects between the university and several industrial partners. These projects focused on computer vision, machine learning, reinforcement learning and signal processing.

Tasks:
- Conceive system architectures
- Review literature
- Conduct experiments
- Write grant proposals and scientific articles

LECTURER (2012-2017)

École de technologie supérieure

During my Ph.D. studies, I taught university courses as principal lecturer and/or T.A.

Courses:
- Neural Networks and Artificial Intelligence
- Conception of Numerical Systems
- Biometric Systems
- Neural Networks and Artificial Intelligence
- Conception and Realization of Numerical Systems
- Media Arts: Interactivity, Ubiquity and Virtuality (Université du Québec à Montréal)

PRINTED CIRCUIT BOARD DESIGNER (2001-2009)

Mechtronix Systems – Flight simulator manufacturer

I designed numeric and analogic circuits that replicate aircraft instruments.

Tasks:
- Conceive micro-controller and programmable logic PCB
- Guide electrical engineers and designers for system conception
- Correct and approve schematics and PCB designs

PRODUCTION SUPPORT AND NEW PRODUCT INTEGRATION INTERNSHIP (2009)

Touchtunes Digital Jukeboxes – Electronic jukeboxes manufacturer

4-month internship during my engineering degree

Tasks:
- Prepare the first production run of new products
- Offer technical support to assembly sites
- Write technical documentation

OTHER EXPERIENCES

INDUSTRY TALKS

Aside from scientific conferences, I gave technical talks at the world-renowned Game Developer Conference 2021 (GDC), Montreal International Game Summit 2017 (MIGS) and CAMDEA 2021

GDC Vault (need credentials)

MIGS 2017

CAMDEA 2021

ART PROJECTS

I designed and developed digital art pieces with professional artists such as Jean Dubois and Laurent Lamarche. The pieces were interactive installations mixing hardware and software. Both were presented in several museums in different countries and got press coverage.

La nuée 2017
BrainStorm

SCIENTIFIC CONFERENCE VOLUNTEERING

I served as **publication chair** for the IEEE International Conference on Image Processing Theory, Tools and Applications (IPTA2017), as **organizer** of the Large Scale Annotation of Biomedical Data and Expert Label Synthesis (LABELS) Workshop at MICCAI 2017, and as **session chair** at ICASSP 2022.

SELECTED PUBLICATIONS

I was the principal author of these publications, or they were written under my close supervision.
These are my favorite contributions, but there are more on my complete scholar profile.

M.-A. Carbonneau, V. Cheplygina, E. Granger, and G. Gagnon, "Multiple Instance Learning: A Survey of Problems and Applications", Elsevier Pattern Recognition, 2018

M.-A. Carbonneau, J. Zaidi, J. Boilard, and G. Gagnon, "Measuring disentanglement: A review of metrics", under review at IEEE Transaction on Neural Networks and Learning Systems, 2021

B. van Niekerk, **M.-A. Carbonneau**, J. Zaïdi, M. Baas, H. Seuté, and H. Kamper, "A Comparison of Discrete and Soft Speech Units for Improved Voice Conversion", ICASSP, 2022

J. Zaïdi, H. Seuté, B. van Niekerk, and **M.-A. Carbonneau**, "Daft-Exprt: Robust Prosody Transfer Across Speakers for Expressive Speech Synthesis", under review at INTERSPEECH, 2022

M.-A. Carbonneau, E. Granger, Y. Attabi, and G. Gagnon, "Feature Learning from Spectrograms for Assessment of Personality Traits", IEEE Transactions on Affective Computing, 2017

M.-A. Carbonneau, E. Granger, and G. Gagnon, "Bag-Level Aggregation for Multiple Instance Active Learning in Instance Classification Problems", IEEE Transaction on Neural Networks and Learning Systems, 2017

A. Langevin, **M.-A. Carbonneau**, M. Cheriet, and G. Gagnon, "Energy disaggregation using variational autoencoders", Elsevier Energy and Buildings, 2022

M.-A. Carbonneau, E. Granger, A. J. Raymond, and G. Gagnon, "Robust multiple-instance learning ensembles using random subspace instance selection", Elsevier Pattern Recognition, 2016

M.-A. Carbonneau, A. J. Raymond, E. Granger, and G. Gagnon, "Real-time visual play-break detection in sport events using a context descriptor", IEEE International Symposium on Circuits and Systems (ISCAS), 2015

M.-A. Carbonneau, N. Lezzoum, J. Voix, and G. Gagnon, "Detection of alarms and warning signals on a digital in-ear device", International Journal of Industrial Ergonomics, 2012

M.-A. Carbonneau, G. Gagnon, R. Sabourin, and J. Dubois, "Recognition of Blowing Sound Types for Real-time Implementation in Mobile Devices", IEEE International New Circuits and Systems Conference (NEWCAS), 2013

OTHER INTERESTS

I play several music instruments such as guitar, bass and clarinet. I operate a modest recording studio and produced a couple of songs in various styles.

I love cooking, fermenting, gardening and play video games.