Hugo Flores García

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Website // Google Scholar // GitHub

BIO

I perform research at the intersection of music, machine learning, and human computer interaction. I'm interested in building interfaces for musical expression, powered by deep learning.

EDUCATION

Northwestern University — Evanston, IL
Ph.D. in Computer Science — *2020 - Present (expected 2025)*

Georgia Southern University — Statesboro, GA
B.S. in Electrical Engineering — *2016 - 2020*

EXPERIENCE

Descript — Remote
Research Intern — *2022.09 - 2023.05*
- Advisor: Prem Seetharaman

Spotify — New York, NY
Research Intern, Audio Intelligence — *2022.06 - 2022.09*
- Advisors: Rachel Bittner and Jan Van Balen

Northwestern University — Evanston, IL
Research Assistant, Interactive Audio Lab — *2020.08 - present*
- Advisor: Bryan Pardo

Audacity (Google Summer of Code) — Remote
Developer — *2021.05-2021.09*
- Source Separation and Extensible Deep Learning Tools

Georgia Southern University — Statesboro, GA
Research Assistant — *2018.08 - 2020.05*
- Advisor: Fernando Ríos

SCIENTIFIC PUBLICATIONS

1. H. Flores Garcia, P. Seetharaman, R. Kumar, and B. Pardo. Vampnet: Music generation via masked acoustic token modeling. In *ISMIR*, 2023
2. H. Flores Garcia, P. O'Reilly, A. Aguilar, C. Benetatos, Z. Duan, and B. Pardo. Harp: Bringing deep learning to the daw with hosted, asynchronous, remote processing. In *7th Workshop on Machine Learning for Creativity and Design at NeurIPS 2023*, 2023
3. Y. Wang, H. F. García, and J. Choi. *Few-Shot and Zero-Shot Learning for Music Information Retrieval*. In 23rd International Society of Music Information Retrieval Conference, 2022
4. H. Flores Garcia, A. Aguilar, E. Manilow, D. Vedenko, and B. Pardo. Deep learning tools for audacity: Helping researchers expand the artist's toolkit. In *5th Workshop on Machine Learning for Creativity and Design at NeurIPS 2021*, 2021
5. H. Flores Garcia, A. Aguilar, E. Manilow, and B. Pardo. Leveraging hierarchical structures for few-shot musical instrument recognition. In *Proceedings of the 22nd International Society of Music Information Retrieval Conference (Best Paper Award)*, 2021

ART INSTALLATIONS

Salad Bowl
NeurIPS 2023 Creative AI *2023*
Interactive Neural Sound Installation. Collaboration with Stephan Moore and Bryan Pardo.

OPEN SOURCE SOFTWARE

unloop
Unloop is a looper pedal in Max/MSP that uses generative modeling to not repeat itself.
See https://github.com/hugofloresgarcia/unloop.html.

nesquik
Nesquik is a vampnet-based audio effect that will transform any instrumental music audio into an "8-bit", NES-style chiptune.
See https://huggingface.co/spaces/hugggof/nesquik.

Audacity (Audio Editor)
Developer *2021 - 2022*
Contributed a software framework that lets deep learning practitioners easily integrate their own PyTorch models into the open-source Audacity DAW. This lets ML audio researchers put tools in the hands of sound artists without doing DAW-specific development work.
See https://interactiveaudiolab.github.io/project/audacity.html.

torchopenl3
A PyTorch port of the OpenL3 audio embedding model.
Used as class materials for CS 352 - Machine Perception of Music and Audio
See https://github.com/hugofloresgarcia/torchopenl3.

Philharmonia Dataset
PyTorch dataset bindings for the Philharmonia Orchestra sound samples.
Used as class materials for CS 352 - Machine Perception of Music and Audio
See https://github.com/hugofloresgarcia/philharmonia-dataset.

TALKS

VampNet: Music Generation via Masked Transformers
Spotify MIQ Reading Group *September 6 2023*

Deep Learning for Music Interfaces
Universidad Nacional Autónoma de México (UNAM) *April 6 2022*

Leveraging Hierarchical Structures for Few-Shot Musical Instrument Recognition
ISMIR 2021 *November 9 2021*

Deep Learning Tools For Audacity: Helping Researchers Expand the Artist's Toolkit
Bay Innovative Signal Hackers (BISH) Bash *October 27 2021*

Deep Learning Tools For Audacity: Helping Researchers Expand the Artist's Toolkit
Neural Audio Synthesis Hackathon (NASH) Workshop *December 12 2021*

HONORS AND AWARDS

ICASSP Outstanding Reviewer Award
ICASSP 2023 *2023*

Best Paper Award - Leveraging Hierarchical Structures for Few Shot Musical Instrument Recognition
ISMIR 2021 *2021*

Cognitive Science Fellowship
Northwestern University *2020 - 2021*

Lewis and Charlene Stewart Jazz Scholarship
Georgia Southern University *2016 - 2020*

Coastal Jazz Scholarship
Coastal Jazz Association *2019*

Undergraduate Research Grant
Georgia Southern University *2018*

Honors Program 1906 Scholarship
Georgia Southern University *2016-2020*

SKILLS

- **Programming Languages** - *Expert:* Python, C++, *Intermediate*: Javascript, C
- **Machine Learning** - *Expert:* PyTorch, Scipy, Numpy, Scikit-learn, TensorFlow
- **Creative Coding** - *Expert:* SuperCollider, Max/MSP/Jitter, *Intermediate:* OpenFrameworks, P5js, PureData, JUCE
- **Music Production** - Logic Pro, Avid ProTools
- **Languages** - I can read/write/speak English and Spanish proficiently.

TEACHING

Teaching Assistant
Northwestern University *Spring 2022*
COMP_SCI 497 – Digital Musical Instrument Design

Teaching Assistant
Northwestern University *Fall 2021*
EECS 349 – Intro to Machine Learning

Teaching Assistant
Georgia Southern University *2018 - 2019*
Electric Circuit Analysis

SERVICE

Reviewer
ICASSP 2023 *2023*

Reviewer
CHI 2023 *2023*

Reviewer
ICASSP 2022 *2022*

Board Member
Latin@CS - Northwestern University *Fall 2021*