



Gregory Oliva

Software Engineer and Musician

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EDUCATION

University of California, Berkeley

B.S. in Electrical Engineering and Computer Science
Minor in Music

August 2015 - May 2019

Relevant Coursework

- Sound and Music Computing with CNMAT Technologies
- Situated Instrument Design for Musical Expression
- Computer Programming for Music Applications
- Operating Systems and Systems Programming
- Programming Languages and Compilers
- Efficient Algorithms and Intractable Problems
- Introduction to Artificial Intelligence
- Music Perception and Cognition

WORK EXPERIENCE

Embark Trucks — *Software Engineer, Data Infrastructure*

January 2023 - March 2023

- Improved data offloading system to reprocess data from existing Truck runs to greatly reduce manual triage requests for the team
- Led initiative to catalog ROS bag file type data size and access patterns for historical data stored in S3 with goal to move into tiered cold-storage
- Expanded Airflow utilities module to support greater flexibility of Airflow functionality in code and built out Airflow testing framework

Affirm, Inc. — *Software Engineer, Data Infrastructure*

August 2019 - October 2022

- Lead for Storage and Replication data infrastructure team; planned and designed team's projects for the financial year, onboarded 4 engineers and one intern to the team, and provided technical advice on project specs from internal stakeholders
- Contributed to building scalable and self-service database snapshots (100+ jobs), MySQL and DynamoDB CDC replication pipelines (1000+ jobs), and Data Warehousing infrastructure
- Developed framework for replication and warehouse infrastructure and launched 2+ additional countries
- Led team to build our observability framework, scale systems for peak periods (Black Friday/Cyber Monday), migrate off of legacy systems, reduce high priority oncall alerts from 80+ to less than 20 per week, and design thorough documentation
- Contributed to migration from Redshift to Snowflake as our primary datawarehouse and led migration from AWS EMR to AWS Glue for DynamoDB replication ETLs
- Built out deploy infrastructure for DBT and ETL Airflow jobs

Affirm, Inc. — *Software Engineer Intern, Data Infrastructure*

May 2018 - August 2018

- Built framework for data pipelines and Spark ETLs running with Docker to write data to/from Redshift and S3
- Developed Saltstack external module to export database schema definitions at deploy time to be consumed by data replication pipelines

Nest Labs, Inc. — Software Engineer Intern, 3rd-Party Devices

May 2017 – August 2017

- Developed internal web portal and API for adding and modifying security permissions for 3rd-party devices that are connected to the Nest ecosystem
- Refactored existing system to support dynamic modification of 3rd-party device permissions and attributes

UC Berkeley Computer Science Department — Academic Intern

January 2016 – December 2016

- Lab assistant for students taking the intro Computer Science course CS61A: Structure and Interpretation of Computer Programs
- Spent 3 hours each week in Labs and Office Hours helping with lab work, homework, and projects, studying for midterms and the final, and answering questions around class topics and lectures

PROJECTS**Music and Technology****GroovePortal — Spatial Audio Mixer and Performance Instrument**

September 2023 – October 2023

- Performance Instrument to explore spatial relationship between audio samples using a Ps5 Controller and the CNMAT RBF1 object
- Designed modes to 1) load and preview audio files, 2) build a multidimensional performance space by defining the spatial relationship between samples, and 3) engage performance mode to interpolate between the samples
- Built interface for using a PlayStation5 Controller to create performance spaces and playback mixed samples
- Programmed abstractions for creating dynamic buffer~ and groove~ objects on the fly using Max scripting
- Developed in Max/MSP and Javascript

HyperLydian — Generative Digital Instrument Video Game

May 2023 – September 2023

- Generative Digital Instrument that looks and feels like a 2D space-shooter video game where player actions create and modify the game's soundtrack
- Developed video game with generative level design, adaptive difficulty, multiple special events, and intense fast-paced combat
- Programmed fully modular polyphonic synthesizer with a sequencer, filter, FM/AM modulation, envelope shaping, and effects chain
- Created mappings between game events and player style to dynamically generate and modify melodies, and modulate instrument timbre, effects processing, and tempo and rhythm parameters
- Developed OSC handler to send game information from the game application to the Max/MSP application to use for generative music handling
- Video Game logic developed in Python using PyGame library, Generative Music programming developed in Max/MSP and Javascript

Situated Instrument Design — CNMAT Performance

January 2018 – April 2018

- Interactive performance at CNMAT, open to the public, that showcased interactive lighting, projection mapping, animations, and an immersive soundscape
- Led work on LED and halogen lighting patches that react to human movement data sent from an Xbox Kinect
- Created patches that send lighting OSC data across the local network to dynamically modulate audio effects processing and projection mapping settings
- Music and Light programming developed in Max/MSP, Xbox Kinect programming developed in Max/MSP and C, and Projection Mapping programming developed in Isadora

Data and Cloud Infrastructure

Managed Replication — *Snapshots and Replication on MWAA*

January 2022 – October 2022

- Designed and optimized 400+ DAGs for running daily database snapshots, full table reloads, and CDC incremental replication on AWS Managed Airflow
- Redesign of ETL/ Data Replication architecture to remove legacy code dependencies

Hardened Observability — *CloudWatch Monitoring for Data Infra*

December 2021 – March 2022

- Automated management and deployment of alerts, metrics, and dashboards across all environments and countries
- Unified metrics, alarms, and dashboards from multiple sources (Kibana, Cabot, Grafana) into CloudWatch
- Developed a framework for emitting runtime and task metrics to CloudWatch from 1000+ replication pipelines
- Implemented Terraform modules to bring up alarms and monitoring dashboards alongside the rest of the stack when bringing up new environments

Data Warehouse V2 — *Snowflake Datawarehouse Infrastructure*

December 2019 – August 2021

- Setup of Snowflake infrastructure and migration of existing data and ETLs
- Built internal Snowflake library for loading data to/from S3 and Snowflake
- Developed Terraform module for managing Snowflake network policies and securable objects
- Built automated user onboarding jobs and a self-service permission management framework
- Contributed to setting up networking (AWS PrivateLink, VPC peering, SSO) to connect multiple AWS accounts to our Snowflake accounts

Video Game Development

Shrouded By Darkness — *Light-Based Survival Horror Game*

February 2019 – May 2019

- Top-down 2D survival horror game that requires resource management of light sources to illuminate the path forward
- Led technical and artistic design of the game and operated as lead programmer and game composer
- Developed enemy AI, weapons system, and light mechanics
- Designed and developed level structure and narrative

TECHNICAL SKILLS

Advanced

- Python
- Max/MSP, odot language within the Max/MSP environment (based on OpenSoundControl)
- Terraform
- Snowflake, Redshift
- Unix, Git, Docker
- Saltstack, YAML

Intermediate

- Java, C
- Unity, C#
- Ableton Live
- gen~, Jitter
- SQL (MySQL, PostgreSQL)
- Apache Airflow, Luigi
- AWS Services (EC2, S3, IAM, EMR, Lambda, Aurora, MWAA, ASG, CloudWatch, VPC)