

Tao Yun Huang

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Creative Technologist & Interactive Developer

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PROFILE

Practice at the intersection of engineering and live experience. Spatial audio, real-time machine learning, mixed reality — from hardware control and sensor fusion, through neural audio synthesis and multichannel rendering, to cross-engine AV pipelines. Research spans institutional sound-art, site-specific AR performance, electromechanical apparatus, and adversarial machine learning as performative medium. Commercial work includes government-commissioned activations and large-scale interactive exhibitions reaching 1,000+ visitors.

LATENT BREACH

LIVE PERFORMANCE

In development

Submitted — ZKM Karlsruhe
2026/27

V2_Unstable Rotterdam

A 20-minute live performance in which every audience member's smartphone becomes a sensing instrument. An iOS / Android AR app runs real-time YOLO object detection while six UWB beacons track each device to centimeter-level precision. At minute ten, PGD adversarial perturbation collapses detection confidence; an AR entity materializes in shared airspace. Object labels are replaced by site-specific narrative text authored from archival research.

Solo — system · narrative · adversarial pipeline

YOLO · UWB · ARKit · PGD · PyTorch · 8-ch audio

Threshold · 閾ELECTROMECHANICAL NEURAL
AUDIO SERIES · 3 VERSIONS

v1 · Taichung 2022

v2 · C-LAB Taipei 2023

v3 · NYCU 2024

A three-version series examining recursive feedback between real-time neural audio synthesis and physical resonance systems. v2 deployed a modified RAVE model across a 49.4-channel Ambisonics system — first deployment of real-time neural audio at this scale in Taiwan's institutional sound-art context. v3 introduced an electromechanical gate apparatus: brass plate driven by stepper motors, solenoids, and pneumatics forming a continuous feedback loop with RAVE synthesis; k-means redistributes output into a five-voice generative score.

Solo — composition · modified RAVE pipeline · electromechanical apparatus design · Ambisonics mapping

RAVE · Max/MSP · Ambisonics · Stepper motors · Solenoids · Pneumatics · k-means

**Circle of Confusion —
Reaction**

VR INSTALLATION

Digital Art Center, Taipei ·
2024

A VR installation exploring the photographic notion of the "circle of confusion" — mediation, diffusion, blur, process. Music triggers cascading algorithmic transformations inside a non-representational VR environment. A custom 3D-printed sculpture translates virtual image into tactile sensation. The spatial audio uses a deliberately incomplete Ambisonics array — speaker absences become bidirectional thresholds. A CO₂ / O₂ gas system gives the installation a respiratory rhythm.

*Solo — concept · system · composition · 3D print*VR · Generative algorithm · Ambisonics · Haptic · CO₂/O₂ gas**River of Shadows · 川影**

SITE & TIME-SPECIFIC IOS AR

NYCU Administrative Building
Hsinchu · 2024

A site-specific, time-specific iOS AR performance. Area Target spatial recognition activates the work from a first-person perspective. The work superimposes two absent spaces onto the physical corridor: the artist's private room and the desert pavilion of Taichung Botanical Garden. A moving white cube serves as navigation score, directing each viewer's physical movement through the corridor in sync with spatial electroacoustic composition.

Solo — iOS AR app development · Area Target spatial recognition · spatial electroacoustic composition · audience navigation choreography

Swift · ARKit · Area Target · Spatial audio

13-Voice CV Synthesizer

ANALOG CIRCUIT DESIGN

1 master · 12 sub-boards

Self-fabricated

A fully self-designed, self-fabricated analog synthesizer. One master voice and twelve sub-voices, each independently CV-controlled through a shared voltage bus. PCB layouts designed from scratch and hand-etched. The architecture enables full polyphonic or multitimbral control from a single CV source.

Solo — circuit schematic design · PCB layout & hand etching · analog assembly · 13-voice system architecture

Analog electronics · PCB design · CV control · Hand fabrication

AI Living Lab

GOVERNMENT ACTIVATION
MODA · Taipei Computer Festival
2025
1,000+ participants · 4 days

Generative audio souvenir system from pedaling sensor data and AI music model I developed and trained.

AI model development & training · hardware sensors · real-time integration

Diesel-Electric Workshop

PERMANENT EXHIBITION
National Railway Museum, Taipei ·
2025

Transparent screen X-ray overlay on live machinery; 60 kg armature choreographed with overhead crane.

Hardware engineering — crane motion control · display control · timing synchronization

Moss Floating Layer

RETAIL IMMERSIVE ENVIRONMENT
SCOPE TECH · Shin Kong Mitsukoshi
A9 · 2025

Immersive moss ecosystem terrarium, Taipei's busiest commercial district.

Sound design — multichannel spatial music composition and system design

Culture-Tech Exchange

LIVE AUDIENCE ENGAGEMENT
TAICCA · Pier-2, Kaohsiung
NT\$4.7B virtual investment · 4
days

Exhibition turned live investment game. Phone-based investments sync to venue leaderboard every 3 minutes.

Unity real-time software · cross-platform interaction (mobile ↔ venue) · live-data viz

EDUCATION

MFA Multimedia Music (New Music Theatre)

2020 - 2024

NYCU — National Yang Ming Chiao Tung University · Institute of Music · 國立陽明交通大學
Advisor: Prof. Chao-Ming Tung

B.A. Drama & Theatre Arts

2014 - 2019

National Taiwan University of Arts · 國立臺灣藝術大學 · Performance, dramaturgy, staging

B.Eng. Electrical Engineering

2010 - 2013

Feng Chia University · 逢甲大學 · Signal processing, embedded systems, control theory

TECHNICAL SKILLS

AUDIO & ML

Spatial Audio · Ambisonics · Neural Synthesis · RAVE · Max/MSP · Pure Data · Dante · Multichannel

XR & SYSTEMS

Unity · ARKit · Swift · TouchDesigner · UWB · YOLO · Computer Vision · Adversarial ML

HARDWARE & CODE

Python · PyTorch · C++ · Motor Control · Embedded · UDP / OSC · PCB Design · Prototyping

AVAILABILITY

Open to full relocation worldwide

EU Blue Card eligible · Canada Global Talent Stream eligible

Mandarin Chinese (native) · English (professional) · Japanese (basic)