
**Cellist Yves Dhar & Hologram AGNES Play World Premiere of
Adam Schoenberg’s Human/A.I. Double Concerto,
Automation with Louisville Orchestra (May 13–14)**



Photo credit: DASYSTEM

(April 2022) — On **May 13–14**, cellist [Yves Dhar](#) – praised for his “richly textured sounds” (*New York Times*) and “technically and interpretatively outstanding” playing (*Strad Magazine*) – joins the **Louisville Orchestra** led by Music Director **Teddy Abrams** for the **world premiere** of ***Automation*** by Emmy-winning and Grammy-nominated composer **Adam Schoenberg**, who has twice ranked among the top ten most performed living composers in the U.S. The work explores the **musical implications of machine learning** and the degree to which human musical expression can survive digital mediation. *Automation* is perhaps best described as a **double concerto for two cellos**, but the work involves **electronics and visual projections**, and the

second cellist is a **hologram** the creators have dubbed **AGNES** (Automatic Generator Network for Excellent Songs), and it plays music that was written by an **AI algorithm**. Adding yet another unique element to the mix, Dhar doubles on a futuristic instrument called the **halldorophone**, the building of which was commissioned for this performance. A video trailer for *Automation* can be seen [here](#).

Developed over a five-year period by Dhar and Schoenberg, who met as doctoral students at Juilliard, *Automation* was conceived as a work that would reflect its historical moment, be relevant to the mainstream conversation and attract younger audiences to the concert hall. They explain:

“We still needed the right orchestra and certainly the right conductor to help bring this to life. Someone who saw our vision, who was accomplished and respected, who was probably young and very much with a finger on the contemporary pulse – it had to be Teddy Abrams, the Louisville Orchestra and their rich tradition of birthing these new works.”



Yves Dhar (photo credit: Lindsay Adler); Adam Schoenberg (photo credit: Sam Zauscher)

The AI that was taught to compose using Schoenberg’s previous works as data was built by **Kathryn Leonard**, Professor of Computer Science at Occidental College, and her partner **Ghassan Sarkis**, Associate Professor of Mathematics and Statistics at Pomona College; they also named their brainchild AGNES. AGNES was, after a period of months, able to generate original musical content that Schoenberg included in his score without alteration. That music was then pre-recorded by Dhar (who also served as the model for the hologram), processed through

synthesizers and quantized to create an acoustic/electronic hybrid sound that is played back live and synced with the holographic cellist's movements.

Icelandic artist and designer **Halldór Úlfarsson's halldorophone** – superficially resembling a cello but in fact a drone-like electro-acoustic instrument that produces distortion, frequency beats, feedback, and rich overtones – can be played with a bow but is sensitive enough to play just by touching the fingerboard. Only a few of the instruments exist; the one featured in *Automation* was specially **commissioned for the work** by Occidental College, and the event will mark the halldorophone's **debut as a solo instrument with orchestra**. Despite their scarcity, the demand for halldorophones is high after they were prominently used in the film scores for *Joker* and *Arrival* by Oscar-winning composer and cellist Hildur Guðnadóttir. An ideal symbol for the intersection of human music-making and AI, a halldorophone is aleatoric: the musician causes it to sound but is not meaningfully in control of the result. As Dhar puts it: “One is constantly searching for new sounds and you never know how the instrument is going to react. Somehow, its weird, mesmerizing sounds just draw you in.”

Automation is a piece of **program music** in the manner of Berlioz's *Symphonie fantastique*, which Abrams and the orchestra perform on the same concert. The narrative begins when a lone human cellist builds a duo partner using the latest AI, 3D-scanning and robotics technologies. Built for exponential learning, AGNES soon matches and surpasses the skill level of its creator. The “Battle Mode” section of the work is a game of musical one-upmanship that AGNES inevitably wins, performing with intervals, rhythms, and speeds not possible for a human. These pyrotechnics overload AGNES's neural network and it short-circuits.

AGNES's prowess prompts an existential crisis in the cellist. He moves to the halldorophone, lost in the perfection of a digital world over whose ethereal beauty he has little control. At this critical moment he is brought back to himself and his cello with a haunting orchestral chorale, music of soothing simplicity that is intended to represent the pinnacle of human expressiveness. In the last few seconds of the work, an echo of AGNES returns; like the very act of creating a machine to render oneself obsolete, this seems a singularly human gesture of ambiguity.

Automation was commissioned by Justin M. Sullivan, in honor of his son Alec Baker Sullivan.

High-resolution photos are available [here](#).

www.AutomationCelloExperience.com

www.facebook.com/yvesdhar

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www.instagram.com/yvesdhar

Yves Dhar with Teddy Abrams & Louisville Orchestra

May 13 at 11am

Louisville, KY

Kentucky Center for the Arts

“Fantastique”

Teddy Abrams, conductor

Yves Dhar, cello

ADAM SCHOENBERG: *Automation* (world premiere)

BERLIOZ: *Symphonie fantastique* (selected movements)

May 14 at 8pm

Louisville, KY

Kentucky Center for the Arts

“Fantastique”

Teddy Abrams, conductor

Yves Dhar, cello

KIMANI BRIDGES: *STATiC* (world premiere, LO commission)

ADAM SCHOENBERG: *Automation* (world premiere)

BERLIOZ: *Symphonie fantastique*

All dates, programs, and artists are subject to change.

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