

Kevin Yin  
Los Angeles, California  
kevinyinml@proton.me

## Research projects

<https://ad8e.pages.dev/keyboard>

Open source music keyboard created by research in harmony. Provides a theory of harmony that matches what listeners hear; prior research (roughness) is inaccurate for chords with 3+ notes. This solves consonance, which is a major learning obstacle for musicians. Audio synthesis with C++ with WebAssembly.

<https://ad8e.pages.dev/curve>

Improves the Pen Tool in vector graphics, by using math to find better Bézier curves. Interactive graphics.

<https://ad8e.pages.dev/music>

Research on computer music composition, work in progress. New discoveries in memory, harmony, and creativity.

## Education

New York University, PhD in Math, 2021. Thesis: Algebraic  $L^2$  Surgery  
Caltech, BS in Math, GPA 4.0, 2015

## Awards

Putnam II (top 200), 2013  
Putnam, ranked top 500, 2012  
USA Math Olympiad, ranked 22 and 21, 2010 and 2011

## Other projects

Self-modifying programming language – for neural networks self-selecting hyperparameters  
Audio synthesis – created a visual programming language for DSP. Low-latency IO (input, display, audio). Uses OpenGL and LLVM  
Algorithmic reverb – topology, automatic calculation of delay line length, distortion reduction  
Rating system – rank players with limited and indirect information, by using statistics and calculus  
Voting theory – candidacy, information efficiency, matching markets, voter weighting. Applicable to organizations – such as promotions, deciding compensation, and team formation  
[Text art editor](#) – colored drawings with 256 characters

## Skills

C++ – 10 years of serious experience  
Javascript, HTML, CSS, Git, PyTorch, Mathematica  
Game design, monetization, and marketing – 1600 pages of novel unpublished research  
Psychology with respect to design – cognitive biases, human behavior, UI/UX  
Audio DSP – filters and subtractive synthesis  
Narrative – design of characters, stories, settings; what interests readers and makes them come back

## Work

Caltech, Consultant. Research on neural network compression of time series, with Stuart Bartlett. 2023  
[Tearline-based vsync](#) – reduce latency at the cost of a tearline, open source, for Blur Busters. 2023  
NYU, Teaching Assistant. Combinatorics, Algebra, Honors Algebra x2. 2018–2019