Title: Lecture 8
Credit: Taught by Professor Mikael Giordi
Draft: 1

FADE IN:

INT. STANFORD CLASSROOM - DAY

                    PROFESSOR GIORDI
               (smiling)
          Welcome to Lecture 8, everyone! I'm
          looking forward to seeing the MIDI
          2.0 projects you've been working on.
          Who would like to present first?

Kate raises her hand, eager to share her project with the
class.

                    KATE
               (confident)
          I'll go first, Professor Giordi.

Kate connects her laptop to the projector and starts her
presentation.

                    KATE
               (excited)
          For my project, I created a MIDI
          2.0-enabled multi-touch controller
          with higher resolution and per-note
          control. This allows for more
          expressive performances, as each
          touchpoint can independently
          manipulate individual notes or
          parameters. I also implemented
          bidirectional communication to
          automatically configure the
          controller based on the connected
          MIDI devices.

Next, Raj presents his project, a MIDI 2.0 software
synthesizer that takes advantage of the new protocol's
features.

                    RAJ
               (enthusiastic)
          For my project, I developed a
          software synthesizer that supports
          MIDI 2.0. The synthesizer uses the
          higher resolution control for more
          precise parameter adjustments and
          per-note controllers for enhanced
          expressiveness. It also supports
          bidirectional communication, which
          streamlines the setup process and
          improves compatibility with various
          MIDI devices.

One by one, the students present their MIDI 2.0 projects.
They showcase a diverse range of devices and software
applications that leverage the new protocol's features. As
each student presents, their peers listen attentively and ask
thoughtful questions, fostering a collaborative learning
environment.

Professor Giordi, impressed by the students' progress,
provides constructive feedback and encouragement. He is proud
to see their understanding of MIDI 2.0 and their ability to
apply it in innovative ways.

                    PROFESSOR GIORDI
               (smiling)
          Great job on your presentations,
          everyone! I'm really impressed with
          your MIDI 2.0 projects and how
          you've incorporated the new features
          into your designs. Now, let's
          continue with today's lecture.

                    PROFESSOR GIORDI
               (continuing)
          Today, we'll explore MIDI Polyphonic
          Expression (MPE). MPE is an
          extension of the MIDI protocol that
          allows for more expressive
          performances by providing per-note
          control over pitch, timbre, and
          amplitude. With MPE, you can achieve
          a level of control similar to
          traditional acoustic instruments but
          within a digital environment.

PROFESSOR GIORDI
(continuing)
MPE works by using multiple MIDI channels, typically one per note, to transmit the data for each individual note. This allows for independent control of pitch bend, pressure, and other continuous controllers on a per-note basis.

PROFESSOR GIORDI
(continuing)
Here are some key aspects of MPE:

PROFESSOR GIORDI
(continuing)
Channel Configuration: MPE devices typically use a dedicated channel for global controls, such as sustain and modulation, and separate channels for each individual note. This allows for independent control of per-note parameters while still maintaining global controls.

PROFESSOR GIORDI
(continuing)
Per-Note Pitch Bend: With MPE, pitch bend messages can be applied to individual notes, allowing for expressive pitch control, such as vibrato and slides.

PROFESSOR GIORDI
(continuing)
Per-Note Continuous Controllers: MPE devices can send continuous controller data, such as pressure and timbre, on a per-note basis. This enables more expressive control of individual notes within a performance.

PROFESSOR GIORDI
(continuing)
Compatibility: MPE is designed to be compatible with both MIDI 1.0 and MIDI 2.0 devices. It can be implemented using standard MIDI messages, making it relatively easy to add MPE support to existing MIDI devices and software.

                    PROFESSOR GIORDI
                  (beaming)
          Now, let me show you some of my own
          projects that make use of MPE. This
          first one is an embedded device I
          developed – it's a custom MPE
          controller with pressure-sensitive
          pads and touch sliders. I use it to
          create more expressive performances
          by manipulating pitch, timbre, and
          pressure individually for each note.

As he demonstrates his custom MPE controller, Giordi plays a
few chords and melodies, showcasing how the device allows for
nuanced control over each note.

                    PROFESSOR GIORDI
                  (enthusiastic)
          And here's a software synthesizer
          I've been working on that supports
          MPE. It allows for per-note control
          over various parameters, such as
          filter cutoff and resonance. By
          using MPE, I can create more organic
          and expressive sounds that are
          reminiscent of traditional acoustic
          instruments.

As Professor Giordi plays his software synthesizer, the
students can hear the expressive capabilities of MPE in
action.

                    PROFESSOR GIORDI
                  (smiling)
          Many popular musicians have embraced
          MPE and incorporated it into their
          performances and compositions. For
          example, Imogen Heap uses MPE with
          her Mi.Mu gloves, which enable her
          to manipulate sounds through
          gestures. Her song "Me The Machine"
          is a fantastic example of MPE in
          action.

                    PROFESSOR GIORDI
                  (continuing)
          Another notable artist is Jordan
          Rudess, the keyboardist for Dream
          Theater. He has been an early
          adopter of MPE technology and uses
          it to create intricate and
          expressive solos. You can hear his
          MPE skills in songs like "The Dance
          of Eternity."

After demonstrating the capabilities and real-world applications of MPE, Professor Giordi is ready to give the students their next assignment. He stands at the front of the classroom and addresses the class.

                    PROFESSOR GIORDI
               (smiling)
          Alright, everyone. For this week's
          assignment, I'd like you to create
          your own MPE-enabled project. You
          can choose to work on either a
          hardware device or a software
          application that supports MPE. Your
          goal is to explore the expressive
          possibilities offered by MPE and
          demonstrate how it can enhance the
          musical experience.

                    PROFESSOR GIORDI
               (continuing)
          Here are some suggestions to get you
          started:

                    PROFESSOR GIORDI
               (continuing)
          Design an MPE controller with a
          unique user interface that allows
          for expressive control over pitch,
          timbre, and amplitude.

                    PROFESSOR GIORDI
               (continuing)
          Develop a software synthesizer or
          sampler that takes advantage of
          MPE's per-note control to create
          organic and expressive sounds.

                    PROFESSOR GIORDI
               (continuing)
          Create an MPE-compatible effects
          processor that can apply different
          effects to individual notes within a
          performance.

                    PROFESSOR GIORDI
               (continuing)
          Remember, the key focus of this
          assignment is to explore and
          showcase the expressive capabilities
          of MPE. Be creative and don't be
          afraid to think outside the box!

FADE OUT.