Title: Lecture 9
Credit: Taught by Professor Mikael Giordi
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FADE IN:

INT. STANFORD CLASSROOM - DAY

As the students gather in the classroom for Lecture 9, they
eagerly prepare to present their MPE-enabled projects. The
atmosphere is charged with excitement as they set up their
hardware and software demonstrations.

                    PROFESSOR GIORDI
               (smiling)
          Alright, everyone. I'm looking
          forward to seeing the innovative and
          expressive projects you've created
          using MPE. Let's start with Clyde.
          Please come up and present your
          project.

Clyde steps forward and presents his MPE project – a
custom-built controller with touch-sensitive pads that allow
for expressive control over pitch, timbre, and amplitude. He
demonstrates the device by playing a short, emotive piece,
showcasing the nuances achievable with MPE.

                    PROFESSOR GIORDI
               (enthused)
          Excellent work, Clyde! Your
          controller has a unique design, and
          I can see how MPE enhances the
          expressiveness of your performance.

Next up is Noah. Noah unveils his software synthesizer, which
utilizes MPE to create organic and evolving soundscapes. He
plays a short composition that demonstrates the intricate
control he has over each individual note, captivating the
class.

                    PROFESSOR GIORDI
               (impressed)
          Great job, Noah! Your synthesizer
          really showcases the potential of
          MPE in creating dynamic and
          expressive sounds.

The presentations continue with each student showcasing their
MPE-enabled projects, including Raj's MPE-compatible effects
processor, Kate's expressive MIDI guitar, Lee's innovative
gestural MPE controller, and Kanjo's MPE-driven interactive
installation.

                    PROFESSOR GIORDI
                 (beaming)
            I am truly impressed by the
            creativity and innovation you've all
            shown in your MPE projects. It's
            fantastic to see you embracing this
            technology and pushing its
            expressive potential. Now, let's
            move on with today's lecture.

                    PROFESSOR GIORDI
                 (continuing)
            Today, we're going to explore how
            MIDI can be used in live performance
            settings. We'll cover topics such as
            MIDI controllers, live looping, and
            MIDI routing for complex live
            setups.

Giordi starts with an overview of popular MIDI controllers
used in live performance, including keyboard controllers,
drum pads, wind controllers, and gestural devices.

                    PROFESSOR GIORDI
                 (enthusiastic)
            MIDI controllers come in various
            shapes and sizes, each offering
            unique ways to interact with sound.
            In live performance, these
            controllers can be used to play
            instruments, trigger samples, or
            manipulate effects in real-time.

Giordi then introduces the concept of live looping,
explaining how MIDI can be used to record, layer, and
manipulate loops on-the-fly.

                    PROFESSOR GIORDI
                 (excited)
            Live looping is a powerful technique
            that allows performers to build up
            layers of sound, creating intricate
            arrangements in real-time. By using
            MIDI controllers to trigger and
            manipulate loops, performers can
            create engaging and dynamic
            performances.

Finally, Giordi discusses MIDI routing in live performance
setups, explaining how performers can use MIDI to control
multiple devices, automate effects, and synchronize
equipment.

                    PROFESSOR GIORDI
                 (interested)
            In complex live setups, MIDI routing
            is essential for managing the flow
            of data between devices. Performers
            can use MIDI to control multiple
            instruments, automate effects
            changes, or synchronize tempo across
            devices, ensuring a cohesive and
            seamless performance.
            PROFESSOR GIORDI
                 (smiling)
            Now that we've explored how MIDI can
            be used in live performance
            settings, let's move on to our
            second topic for today: integrating
            MIDI with other technologies and
            protocols, such as Open Sound
            Control (OSC) and DMX.

First, Giordi introduces the students to Open Sound Control,
a more modern communication protocol that can be used
alongside MIDI for additional flexibility and control.

                    PROFESSOR GIORDI
                 (interested)
            Open Sound Control, or OSC, is a
            flexible communication protocol
            designed for networking computers,
            sound synthesizers, and other
            multimedia devices. It provides
            high-resolution, low-latency
            communication that can be used in
            tandem with MIDI to create more
            complex and responsive systems.

Giordi demonstrates an example of using OSC alongside MIDI to
control a lighting system during a live performance. He shows
the class how to set up an OSC-enabled device to receive MIDI
messages and use them to trigger lighting changes in sync
with the music.

                    PROFESSOR GIORDI
                 (enthusiastic)
            By combining MIDI and OSC, we can
            create powerful performance systems
            that not only control sound but also
            integrate visual elements such as
            lighting and video.

Next, Giordi introduces the DMX protocol, commonly used in
lighting and stage design.

                    PROFESSOR GIORDI
                 (informative)
            DMX, or Digital Multiplex, is a
            standard protocol for controlling
            stage lighting and effects. It can
            be used alongside MIDI to create
            synchronized audio-visual
            performances. For example, you can
            map MIDI messages to DMX channels,
            allowing your MIDI controller to
            trigger lighting changes or control
            fog machines.

Giordi shows the students how to set up a MIDI-to-DMX
interface and explains the process of mapping MIDI messages
to DMX channels for controlling stage lighting.

                    PROFESSOR GIORDI
                 (inspired)
            By integrating MIDI with other
            technologies such as OSC and DMX, we
            can create immersive, multimedia
            experiences that push the boundaries
            of what's possible in live
            performance and installations.

                    PROFESSOR GIORDI
                 (smiling)
            This week, I want you to create a
            project that demonstrates the
            integration of MIDI with either OSC
            or DMX. You can choose to focus on
            live performance, installations, or
            any other context that interests
            you.

                    PROFESSOR GIORDI
                 (continuing)
            For those working with OSC, consider
            creating a system that communicates
            between multiple devices, such as
            computers, synthesizers, or lighting
            systems. Explore how OSC can
            complement MIDI to provide more
            flexible and responsive control.

                    PROFESSOR GIORDI
                 (continuing)
            For those working with DMX, think
            about how you can synchronize audio
            and visual elements using MIDI and
            DMX. Create a small-scale
            performance setup or an installation
            that integrates sound, lighting, and
            other stage effects.

                    PROFESSOR GIORDI
                 (continuing)
To get started, you may want to
research existing projects that
combine MIDI with OSC or DMX, and
experiment with different software
and hardware solutions for
interfacing between the two
protocols. Remember to document your
process and be prepared to present
your project next week.