Title: Lecture 7
Credit: Taught by Professor Mikael Giordi
Draft: 1

FADE IN:

INT. STANFORD CLASSROOM - DAY

Professor Giordi is excited to see his students' progress on their secure MIDI network assignments. The students, nervous but eager, are ready to present their projects.

PROFESSOR GIORDI
(smiling)
All right, everyone, it's time to see your secure MIDI network projects. I'm eager to see how you've implemented the security measures we've discussed last week. Who would like to present first?

Clyde raises his hand, ready to share his project with the class.

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

Clyde connects his laptop to the projector and starts his presentation.

CLYDE
(excited)
For my project, I created a MIDI network using Wi-Fi with network segmentation and strong authentication. I set up a separate VLAN for my MIDI devices, isolating them from the rest of my network. I also implemented two-factor authentication using a combination of passwords and one-time tokens generated by an authenticator app.

Next, Noah presents his project, showcasing his MIDI network that incorporates a firewall and VPN.

NOAH
(nervous)
For my MIDI network, I decided to focus on securing the communication between my devices. I set up a firewall with strict access rules and used a VPN to encrypt my MIDI data as it traversed the network.

As each student presents their project, Professor Giordi listens attentively, taking notes and providing constructive feedback. He is pleased with the diverse range of security measures implemented by the students and their understanding of MIDI networking and security principles.

PROFESSOR GIORDI
(excited)
Great job on your presentations, everyone! It's clear you've all put a lot of thought into securing your MIDI networks. Now, let's move on with today's lecture.

PROFESSOR GIORDI
(continuing)
Today, we'll be discussing MIDI 2.0, the latest version of the MIDI protocol. MIDI 2.0 introduces several new features and enhancements, such as higher resolution, more expressive control, and improved compatibility. Let's dive into these improvements and see how they can benefit your MIDI projects.

PROFESSOR GIORDI
(continuing)
Higher Resolution: MIDI 2.0 features a 32-bit resolution, a significant increase from the 7-bit resolution in MIDI 1.0. This higher resolution allows for greater precision and dynamic range, enabling more nuanced and expressive performances.

PROFESSOR GIORDI
(continuing)
Bidirectional Communication: MIDI 2.0 introduces bidirectional communication, allowing devices to exchange information about their capabilities and configurations. This feature enhances compatibility and makes it easier to set up and use MIDI devices.

PROFESSOR GIORDI
(continuing)
Expanded Control: MIDI 2.0 supports a greater number of controllers and parameters, providing more options for expressive control. Additionally, the new protocol introduces per-note controllers, which allow for independent manipulation of individual notes within a chord or sequence.

PROFESSOR GIORDI
(continuing)
Enhanced Compatibility: MIDI 2.0 is designed to be backward compatible with MIDI 1.0 devices, ensuring that your existing MIDI gear can still be used alongside newer equipment.

PROFESSOR GIORDI
(enthusiastic)
Now that we've covered the key features of MIDI 2.0, let's discuss how it can be utilized in embedded devices and software. This new protocol offers exciting possibilities for the development of innovative and expressive musical interfaces.

PROFESSOR GIORDI
(continuing)
Embedded Devices: With the increased resolution and expanded control offered by MIDI 2.0, embedded devices can provide more precise and expressive musical interfaces. For example, touch-sensitive controllers can now take full advantage of the 32-bit resolution, allowing for greater sensitivity and more nuanced performances. Additionally, the bidirectional communication feature can enable embedded devices to automatically configure themselves based on the connected MIDI gear, simplifying setup and improving interoperability.

PROFESSOR GIORDI
(continuing)
Software: MIDI 2.0 can be leveraged in software applications to provide improved control and compatibility. Digital Audio Workstations (DAWs) and virtual instruments can utilize the enhanced resolution and expanded control options to offer more realistic and expressive sound generation. Furthermore, software can take advantage of the bidirectional communication to better manage MIDI devices and streamline the user experience.

PROFESSOR GIORDI
(continuing)
Firmware Updates: As MIDI 2.0 is backward compatible with MIDI 1.0, many existing devices can be updated to support the new protocol through firmware updates. This enables developers to add MIDI 2.0 functionality to their existing products, extending their capabilities and ensuring compatibility with new MIDI 2.0 devices and software.

PROFESSOR GIORDI
(continuing)
New Product Development: MIDI 2.0 opens up new possibilities for the development of cutting-edge musical instruments and controllers. By incorporating the latest features of the protocol, developers can create innovative devices that offer enhanced expressiveness, control, and compatibility.

PROFESSOR GIORDI
(excited)
For this week's assignment, I'd like you to design a MIDI 2.0-enabled device or software application that takes advantage of the new features and enhancements we've discussed today.

PROFESSOR GIORDI
(continuing)
Your project should incorporate at least two of the following MIDI 2.0 features:

PROFESSOR GIORDI
(continuing)
Higher resolution control
Bidirectional communication
Expanded control options, such as per-note controllers
Compatibility with both MIDI 1.0 and MIDI 2.0 devices
In your submission, please include a detailed description of your project, along with diagrams or mockups to illustrate your design. Additionally, provide an explanation of how your project leverages MIDI 2.0 features and the benefits they offer.

PROFESSOR GIORDI
(continuing)
As you work on your projects, consider how you can create innovative and expressive musical interfaces using MIDI 2.0. This is an opportunity for you to explore the potential of this new protocol and apply the knowledge you've gained throughout the course.

PROFESSOR GIORDI
(continuing)
The students, excited by the challenge, start brainstorming ideas for their MIDI 2.0 projects. They are eager to delve into the new features and create unique devices or software applications that demonstrate their understanding of MIDI 2.0.

FADE OUT.