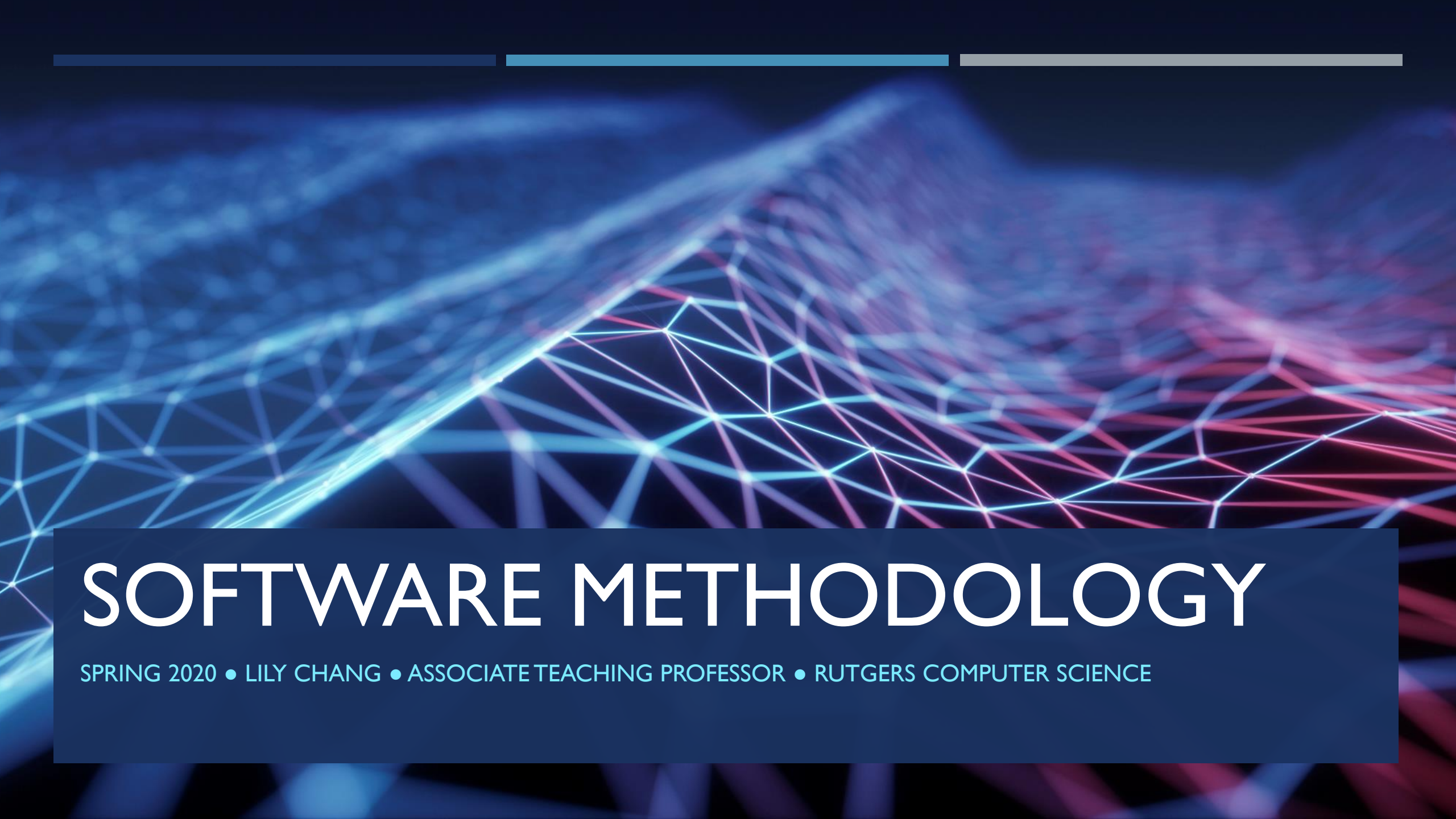

SOFTWARE METHODOLOGY

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JAVAFX BASICS

WHAT IS JAVAFX?

- JavaFX is a set of graphics and media packages that enables developers to design, create, test, debug, and deploy rich client applications that operate consistently across diverse platforms
- JavaFX library is written as a Java API, JavaFX application code can reference APIs from any Java library: https://openjfx.io/javadoc/13/
- Download: https://gluonhq.com/products/javafx/
- Getting started with JavaFX 13: https://openjfx.io/openjfx-docs/

JAVAFX APPLICATIONS

- The look and feel of JavaFX applications can be customized
- Cascading Style Sheets (CSS) separate appearance and style from implementation so that developers can concentrate on coding
  - Graphic designers can easily customize the appearance and style of the application through the CSS
  - You can develop the presentation aspects of the UI in the FXML scripting language and use Java code for the application logic
- To design UIs without writing code, then use JavaFX Scene Builder.
  - Scene Builder creates FXML markup that can be ported to an Integrated Development Environment (IDE) so that developers can add the business logic
  - Download: https://gluonhq.com/products/scene-builder/
  - Configuring the Scene Builder in IntelliJ: https://www.jetbrains.com/help/idea/opening-fxml-files-in-javafx-scene-builder.html

KEY FEATURES

- **Java APIs**.
  - A Java library that consists of classes and interfaces that are written in Java code
- **FXML and Scene Builder**
  - FXML is an XML-based declarative markup language for constructing a JavaFX application user interface
- **WebView**
  - A web component that uses WebKitHTML technology to make it possible to embed web pages within a JavaFX application
  - JavaScript running in WebView can call Java APIs, and Java APIs can call JavaScript running in WebView Adding HTML Content to JavaFX Applications.

KEY FEATURES – CONT.

- **Swing interoperability**
  - Existing Swing applications can be updated with JavaFX features, such as rich graphics media playback and embedded Web content. The SwingNode class, which enables you to embed Swing content into JavaFX applications
- **Built-in UI controls and CSS**
  - Provides all the major UI controls that are required to develop a full-featured application
- **3D Graphics Features**
  - API classes for Shape3D (Box, Cylinder, MeshView, and Sphere subclasses), SubScene, Material, PickResult, LightBase (AmbientLight and PointLight subclasses), and SceneAntialiasing

KEY FEATURES – CONT.

- **Canvas API**
  - Enables drawing directly within an area of the JavaFX scene that consists of one graphical element (node).
- **Printing API**
  - The javafx.print package provides the public classes for the JavaFX Printing API.
- **Rich Text Support**
  - Enhanced text support to JavaFX, including bi-directional text and complex text scripts, and multi-line, multi-style text in text nodes
- **Multitouch Support for handheld devices**
  - Provides support for multitouch operations, based on the capabilities of the underlying platform.

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WHAT CAN WE BUILD WITH JAVAFX?

- You can build many types of applications
- Typically, they are network-aware applications that are deployed across multiple platforms and display information in a high-performance modern user interface that features audio, video, graphics, and animation

JAVAFX VS. SWING AND AWT

- When Java was introduced, the GUI classes were bundled in a library known as the *Abstract Windows Toolkit* ***(AWT)***, which is prone to platform-specific bugs
- ***Swing*** replaced the AWT user-interface components where components are painted directly on canvases using Java code; it is designed for developing desktop GUI applications
- ***JavaFX*** replaced Swing and is a newer GUI platform that incorporates modern GUI technologies to enable you to develop rich GUI applications
  - Provides a multitouch support for touch-enabled devices such as tablets and smart phones, 2D, 3D, animation, and video and audio playback
  - Oracle no longer supports JavaFX, which is now OpenFX: https://openjfx.io/

WORKING ON JAVAFX APPS WITH YOUR FAVORITE IDE

- Eclipse
  - Download e(fx)clipse – must be 3.5 or later, current version is 3.6
    - In Eclipse, select Help/Eclipse Marketplace, type "fx" and search
    - This will give you the options of creating a JavaFX project under File/New/Project
- IntelliJ and Eclipse
  - Download JavaFX APIs - https://gluonhq.com/products/javafx/
  - Download SceneBuilder to make the GUI programming easier
    - https://gluonhq.com/products/scene-builder/#download
    - IntelliJ – Preferences -> Languages and Frameworks -> JavaFX -> Path to SceneBuilder: **/Applications/SceneBuilder.app**
    - Eclipse – right click the .fxml file and open with SceneBuilder

THANK YOU