



Mobile application development

移动应用开发



Lecture 01:

INTRO TO APP INVENTOR



Dr Ata Jahangir Moshayedi

Prof Associate ,
School of information engineering Jiangxi
university of science and technology, China



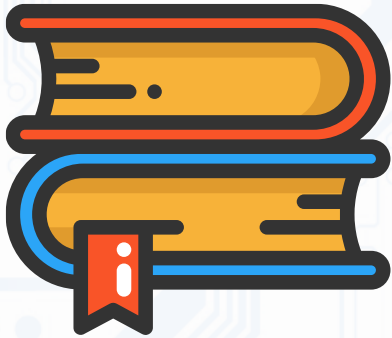
EMAIL: ajm@jxust.edu.cn

Autumn _2021



江西理工大学信息工程学院

JIANGXI UNIVERSITY OF SCIENCE AND TECHNOLOGY SCHOOL OF INFORMATION ENGINEERING



MOBILE APPLICATION DEVELOPMENT

LECTURE 01: **Mobile development environments and APP Inventor**





Andriod IDE For Developing Android Apps

- A software application, Android IDE (Integrated Development Environment) is used for the creation and development of software. It is a single framework that unites multiple tools required for developing software.
- Nowadays, a majority of mobile app developers are using IDEs for developing apps for Android devices. With the rise in the popularity of Android apps over the last few years has contributed to the high usage of IDEs for app creation.
- Here, we have curated a list of 8 most used IDEs for developing Android apps in 2019. The below-stated IDEs support an array of programming languages like Java and C++ and enable pro mobile developers and even beginners to build native or hybrid apps.
- These app development tools are among the most used IDEs by programmers and developers all over the world as it helps maximize productivity by creating stable applications integrated with best features. Everything from easy code navigation to error-checking features of these IDEs makes them the best android development environments.





Android IDE

1. **Android Studio:** Google's official IDE for Android based on IntelliJ IDEA.
2. **Eclipse:** This open source IDE is the second most popular in the world. It is more than just an IDE for Java desktop apps!
3. **Visual Studio (with Xamarin):** Microsoft's flagship IDE comes in multiple versions, but when integrated with Xamarin (which Microsoft purchased last year), it enables cross-platform native development.
4. **IntelliJ IDEA:** IntelliJ IDEA is described as a "capable and ergonomic IDE for JVM."
5. **NetBeans:** NetBeans is known primarily as a Java IDE, but it also supports many other languages. It is the official IDE for Java 8 and boasts a large community of users, and works well for Android development





Android IDE

6. **Komodo:** ActiveState's Komodo humbly proclaims itself "the best IDE for Web and mobile app development"
7. **Cordova:** First developed by a company called Nitobi, Cordova was originally known as PhoneGap.
8. **PhoneGap:** PhoneGap is Adobe's implementation of the Apache Cordova open source mobile development framework.
9. **Appcelerator Titanium:** Axway Appcelerator platform "powers mobility for 70 percent of the Fortune 100."
10. **App Inventor:** App Inventor aims at helping students and other new developers create their first Android apps.
11. **AIDE:** AIDE allows you to develop Android apps or Web sites from your Android device.

<https://www.developer.com/ws/android/development-tools/top-android-ides-for-developers.html>





Criteria Reviewed for Selecting Android IDEs

- To determine which IDEs to include in the list, we reviewed several core areas, including the following:
 - *Developer/owner of the Android IDE*
 - *Key features of the Android IDE*
 - *Programming languages supported*
 - *Targeted operating systems (in addition to Android)*
 - *Operating systems on which the IDE runs*
 - *System requirements for running the IDE*
 - *Target audience for the Android IDE*
 - *First production release of the Android IDE*
 - *Most recent update/stable release for the Android IDE*
 - *License (Open source, proprietary, freeware, and so forth)*
 - *Price for the Android IDE*





1. Android Studio

- Android Studio is often rated as the best IDE for Android development. This development tool is built by Google and has received raved reviews by mobile app developers all over the world.
- There are plenty of advantages to using Android Studio as an Android development environment.
- This IDE for Android development allows mobile app developers to test the application on various platforms.
- This IDE is perfect for beginners as it features app-building lessons that help developers get an understanding of the entire process. Some of the top features of Android Studio that make it the best Android IDE app are code completion and real-time error check post-deployment of the mobile app.





2. IntelliJ IDEA

- Popular for providing excellent coding assistance to the Android app developers, the IntelliJ IDEA is also considered to be among the best android development tool by various professionals.
- It is a Java programming app for Android that many developers use to build top-quality applications that are responsive, fast, and most importantly stable.
- When compared to standard mobile app development tools, IntelliJ IDEA features a multiplayer framework and is undeniably a better choice as it significantly improves the productivity of the developer.





3. DroidScript

- DroidScript is another IDE for Android development that is widely used by developers. Designed to maximize developer productivity, this android development IDE boasts a wide array of features and powerful coding.
- The easy process of mobile app building facilitated by DroidScript makes it one of the best android app development software available.
- Available in the web stores, DroidScript is a Java IDE for android that can be easily downloaded on your computer.
- You can build feature-rich native Android apps with the help of DroidScript. It's easy to navigate through the platform makes it one of the best android development tools even for beginners.





4. Visual Studio

- Visual Studio is also among the best android app development software that mobile app developers often use to build the native as well as hybrid apps.
- Equipped with powerful coding, this incredible integrated development environment lets developers not just build attractive and responsive mobile apps but also test its various functionalities.
- It provides developers with the analytics data that helps them improve the speed of the app and provide quick fixes to bugs. By using the features of Visual Studio, developers can create efficient applications that are free of bugs and offer enhanced app experience to its users.





5. Corona

- Corona is a highly preferred portable coding tool which serves as the best IDE for Android development. Everything from downloading, installing, writing programs, to deploying the mobile app, Corona ensures that the developers have a hassle-free experience while building mobile applications.
- Once done with the development process, developers can test the app and make the required changes to deliver top-performing apps.
- Beginners, as well as experienced developers, use this IDE as it is known as build adaptive and responsive apps.
- Aside from that, the reason why Corona is hailed as the best android app development software is that it allows developers to test the final version, resolve problems, and repair bugs in a smooth and trouble-free way.





6. AIDE – Android IDE

- Use your android devices to create top-quality mobile apps with AIDE (Android IDE). This incredibly powerful IDE helps developers design the best android apps that are rich with features and look visually appealing.
- Mobile app developers can utilize this extensively used and top-rated android development IDE to build the apps with ultimate ease.
- This platform makes coding seem like a rather easy task. Professional developers, as well as beginners, use this IDE for android app development.





7. CppDroid

- Equipped with numerous code examples, CppDroid is an IDE that has received positive reviews from expert developers in the last few years. This IDE comes with the offline feature and helps developers with code completion and also configuration.
- Moreover, its powerful real-time diagnostics property allows app developers to fix security threats and bugs that cause the app to function inefficiently and slowly.
- CppDroid offers plenty of tutorials, samples, and examples that new mobile app developers can use to get a better understanding of the process and create the best app. It also comes with Google Drive support and even works without an internet connection.





8. Basic4Android (B4A)

- Basic4Android commonly referred to as B4A is a mobile app development platform that lets developers create apps for Android devices.
- This IDE can help developers build any type of android app. Boasting functional features like code completion, Basic4Android makes the mobile app development process a less challenging task for the developers.
- Just install, decide on the interface, layout, and features, write the code to create an application.
- B4A lets you customize the app so that you can use a unique theme and decide on the location of the tabs.





Some Android IDEs

Android Development IDEs	Language s	Target OS	Runs On	Audience	License	Price
Android Studio		Android		Experienced	Freeware	Free
	Java		Windows			
	C		MacOS			
	C++		Linux			
	Kotlin					
Eclipse			Any OS supporting Java	Professional Developers	Eclipse Public License	Free
	Java					
	C	Android				
	C++	iOS				
	C#	Linux				
	JavaScript	MacOS				
	Python	Windows				
	more					
Visual Studio (with Xamarin)				Experienced	Proprietary, Visual Studio Code is Open Source MIT	Free to \$2,999+
	C++	Cross-Platform	Windows			
	C	Windows	MacOS			
	C#	Android	Linux			
	Visual Basic	iOS				
	PHP	more				
	JavaScript					
	more					





Some Android IDEs

Android						
Development IDEs	Languages	Target OS	Runs On	Audience	License	Price
IntelliJ IDEA		Any OS supporting Java		Professional Java Developers		Free to \$499/year
	Java		Windows		Proprietary, Community Edition is	
	Scala					
	Groovy		MacOS		Apache 2.0 License	
	Kotlin		Linux			
	JavaScript					
	TypeScript					
	SQL					
NetBeans		Cross-platform		Professional Developers	CDDL 1.0 and GPL2	Free
	Java		Windows			
	C		MacOS			
	C++		Linux			
	HTML		Solaris			
	PHP					
	JavaScript					
	others					





Some Android IDEs

Android Development IDEs	Languages	Target OS	Runs On	Audience	License	Price
Komodo	Java	Cross-platform	Windows	Professional Web and mobile developers	Proprietary, Komodo Edit is Mozilla	Free to \$394+
	JavaScript				Public License	
	Python		MacOS			
	PHP		Linux			
	HTML					
	Ruby					
	others					
Cordova	HTML	Cross-platform	Windows	Experienced Web developers	Apache 2.0 License	Free
	CSS	Android	MacOS			
	JavaScript	Windows	Linux			
		iOS				
		MacOS				
		Ubuntu				
PhoneGap	HTML	Cross-platform	Windows	Web developers	Apache 2.0 License	Free
	CSS	Android	MacOS			
	JavaScript	iOS	Linux			
			Android			
			Windows Phone			





Some Android IDEs

Android Development IDEs	Languages	Target OS	Runs On	Audience	License	Price
Appcelerator Titanium	JavaScript			JavaScript developers	Proprietary, Titanium alone is Apache 2.0 License	Free to \$99+ per month
		iOS	Windows			
		Android	MacOS			
		Windows	Linux			
App Inventor	Kawa	Android		Students and amateurs	MIT License	Free
			Windows			
			MacOS			
			Linux			
AIDE			Android	Amateurs or mobile professionals	Proprietary	Free with in-app purchases
	Java	Android				
	C	Web				
	C++					
	XML					
	HTML					
	CSS					
	JavaScript					





Meet some experts





What is App Inventor?

- AppInventor is an online app development software maintained by MIT.
- This development tool is a great way to show beginning programmers how to use block-style programming to make simple apps and games.





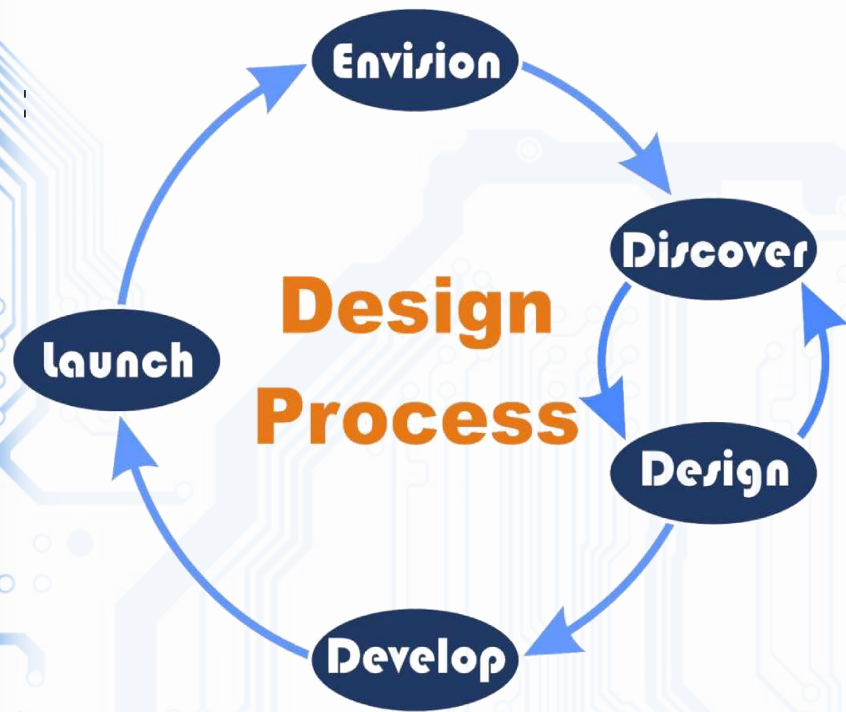
App Inventor history

- **MIT App Inventor** is a web application integrated development environment originally provided by Google, and now maintained by the Massachusetts Institute of Technology (MIT).
- It allows newcomers to computer programming to create application software(apps) for two operating systems (OS):
Android, and iOS, which,
as of 8 July 2019, is in final beta testing.
- It is free and open-source software released under dual licensing: a Creative Commons Attribution ShareAlike 3.0 Unported license, and an Apache License 2.0 for the source code.





What is App Inventor?



It uses a graphical user interface (GUI) very similar to the programming languages [Scratch](#) (programming language) and the [StarLogo](#), which allows users to drag and drop visual objects to create an application that can run on android devices, while a App-Inventor Companion (The program that allows the app to run and debug on) that works on iOS running devices are still under development.

In creating App Inventor, Google drew upon significant prior research in educational computing, and work done within Google on online development environments.





What is App Inventor?

- App Inventor and the other projects are based on and informed by **constructionist learning** theories, which emphasize that programming can be a vehicle for engaging powerful ideas through active learning.
- As such, it is part of an ongoing movement in computers and education that began with the work of **Seymour Papert** and the MIT Logo Group in the 1960s, and has also manifested itself with **Mitchel Resnick's** work on **Lego Mindstorms** and **Star Logo**.





App Inventor



**Build your project on
your computer**



- **Connecting a device:**
- **MIT AI2 Companion - Required local app**
- **Live preview!**



**Test it in real-time on
your device**





The Vision for App Inventor

- Everyone should be able to tinker with their smartphones
- Use excitement about phones to attract people to CS



Hal Abelson



Mark Friedman

- The application was made available through request on July 12, 2010, and released publicly on December 15, 2010. The App Inventor team was led by Hal Abelson and Mark Friedman.
- In the second half of 2011, Google released the source code, terminated its server, and provided funding to create
- *The MIT Center for Mobile Learning*, led by App Inventor creator Hal Abelson and fellow MIT professors Eric Klopfer and Mitchel Resnick.
- The MIT version was launched in March 2012.

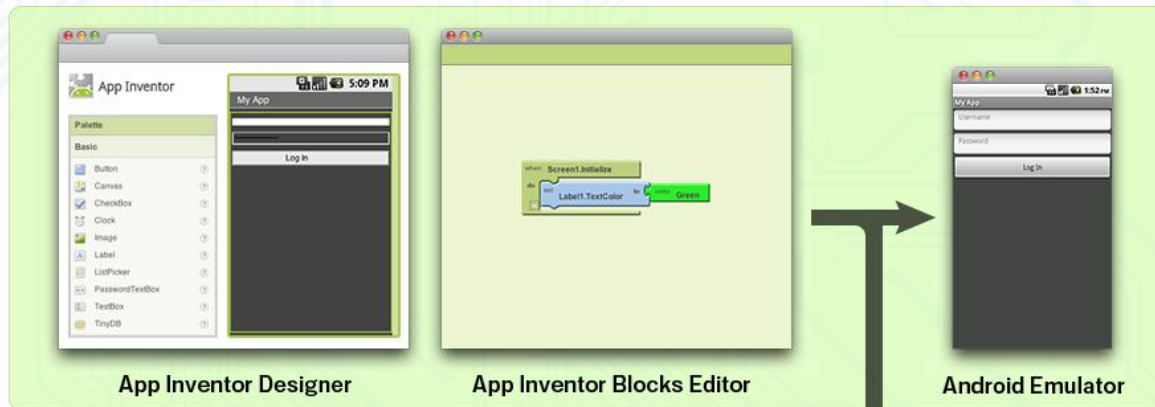




What is App Inventor?



Google App Inventor Servers



App Inventor Designer

App Inventor Blocks Editor

Android Emulator

<http://appinventor.googlelabs.com/>



江西理工大学信息工程学院

JIANGXI UNIVERSITY OF SCIENCE AND TECHNOLOGY SCHOOL OF INFORMATION ENGINEERING



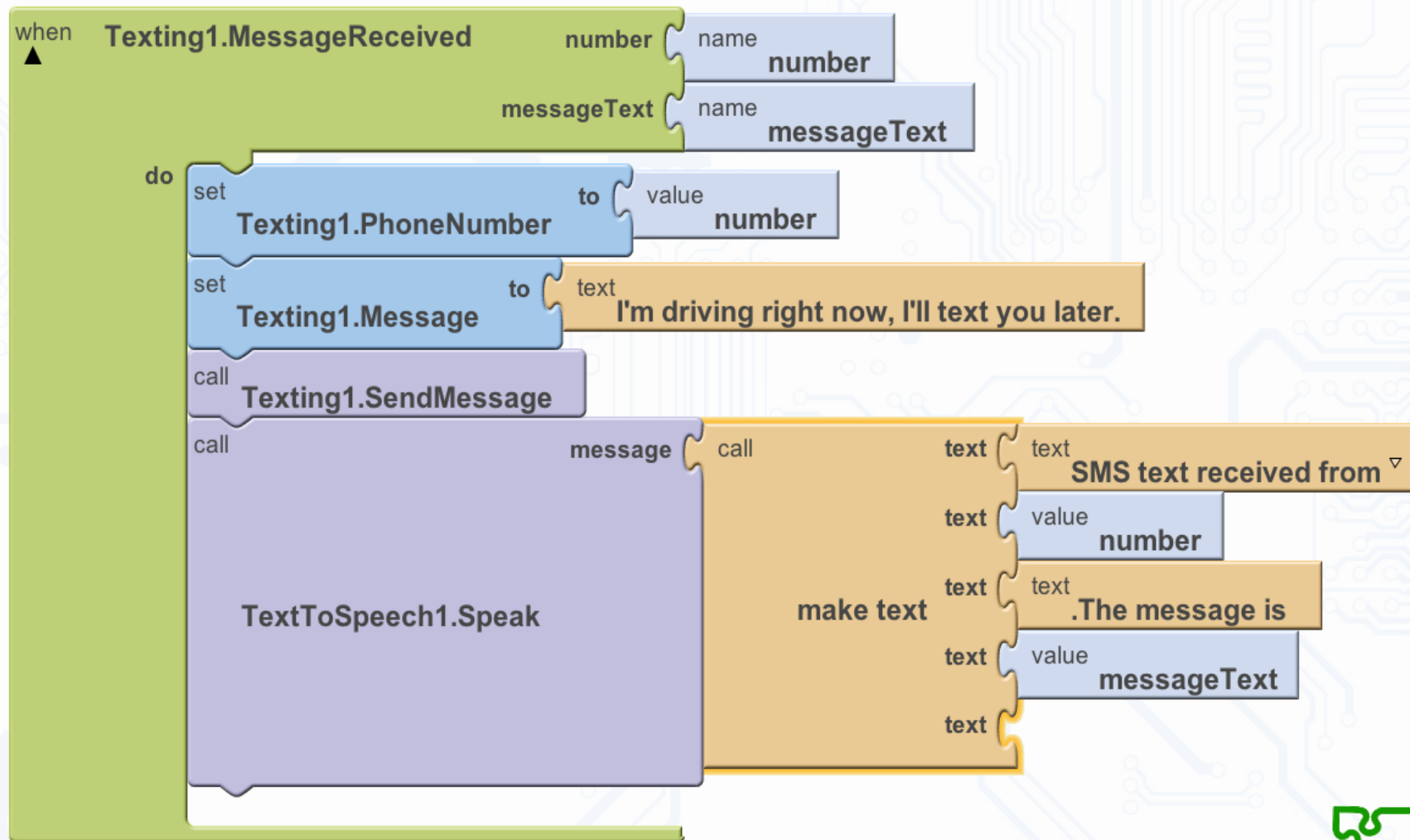
Android Phone



App Inventor



The "Hello World" of App Inventor





Why App Inventor Works

- Event-based
- No Syntax Errors
- Drag and drop, only some blocks plug-in
- High-level Android library built by Googlers





How you can use App Inventor

- Prototyping
- Build Complete Apps
- "Situated" apps
- Personal apps





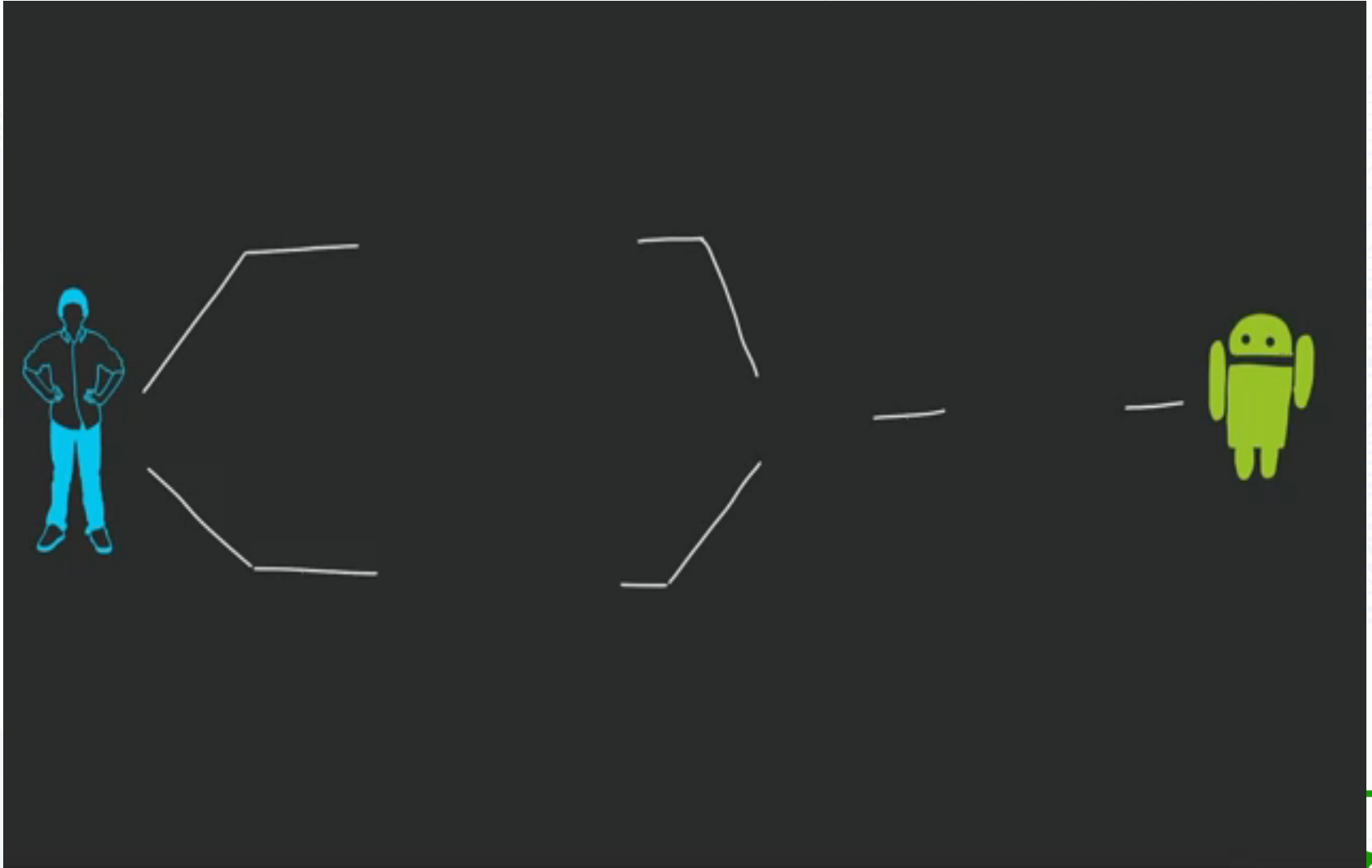
Why Learn App Inventor?

- Software is in every *walk* of life. Programming is becoming part of many jobs.
- Explore mobile computing
- Practical Skills -- web, math, media
- Prep for learning Java, Python, Javascript, etc.
- Creativity, entrepreneurship, idea formulation
- Problem-Solving skills
- **YOU CAN CHANGE THE WORLD**





App Inventor?



江西理工大学信息工程学院

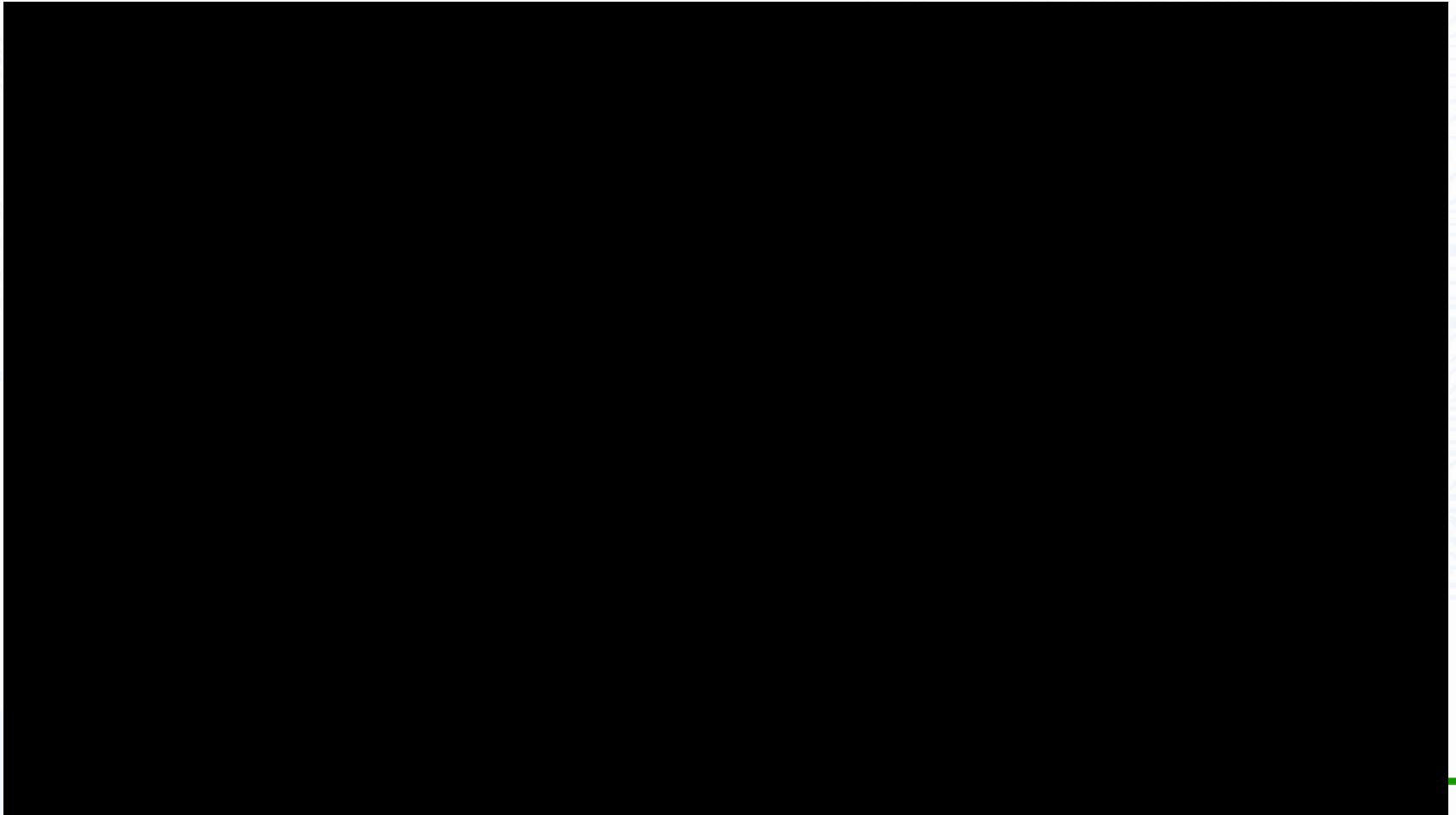
JIANGXI UNIVERSITY OF SCIENCE AND TECHNOLOGY SCHOOL OF INFORMATION ENGINEERING



App Inventor



Can any one become app developer





Student Task_1



- 1. What the rank of APP inventor between other android IDE**
- 2. List the advantage and disavnatage of APP Inventor**
3. What can you build with App Inventor?

Next lecture





Reference

- **Teaching with AppInventor**
<http://appinventor.mit.edu/explore/teach.html>
- **AppInventor Tutorials:**
<http://appinventor.mit.edu/explore/ai2/tutorials.html>
- **Sounds** <http://www.soundbible.com>
- **App Inventor:** <http://appinventor.googlelabs.com/>
- **Appinventor.org:** <http://www.appinventor.org/>
- **Wolber, Abelson et al. text:** <http://www.appinventor.org/text2011>
- **Group:** <http://groups.google.com/group/app-inventor-instructors>
- **Wolber course:** <http://appinventor.org/course-in-a-box>
- **Morelli course:** <http://turing.cs.trincoll.edu/~ram/cpsc110/>



江西理工大学

Jiangxi University of Science and Technology

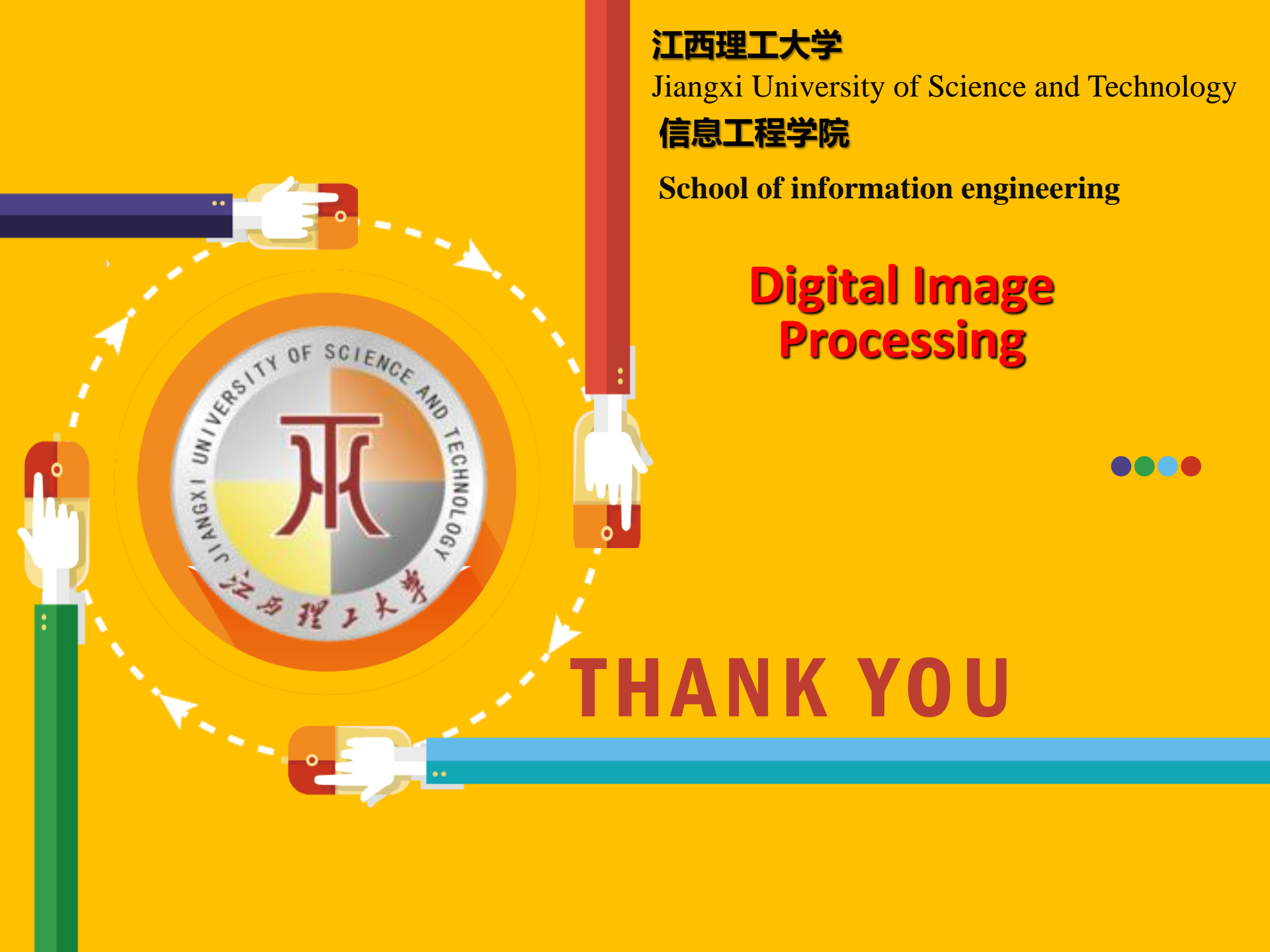
信息工程学院

School of information engineering

Digital Image Processing



THANK YOU





**“BE HUMBLE. BE HUNGRY.
AND ALWAYS BE THE
HARDEST WORKER
IN THE ROOM.”**





“The beauty of research is that you never know where it’s going to lead.”

RICHARD ROBERTS
Nobel Prize in Physiology or
Medicine 1993