CREDO School

CREDO Detector and other mobile applications

Michał Niedźwiecki*, Aleksander Ćwikła*, Marta Marek** *Cracow University of Technology **Astroparticle Physics Enthusiast

Agenda



Compile CREDO Detector Android app from source code

and contribute on GitHub project

Install and configure Android Studio

Please download and install Android Studio 3.2: <u>https://developer.android.com/studio/</u>



Clone repository from GitHub

Please open Android Studio and click on menu: **File** \rightarrow **Project from Version Control** \rightarrow **Git**

https://github.com/credo-science/credo-detector-android.git



Android project import

🎮 Import Project	×	🚈 Import Project	×	🛎 Import Project		×
Create project from gxisting sources Import project from external model		Project n <u>a</u> me: credo-detector-android Project location: C:\Users\nkg75\StudioProjects\credo-det	ector-android	Source files for your p be added to the proje Note: the program wi	rroject have been found. Please choose directories that will ct roots. These paths correspond to default (root, unnamed, top level) pack II recognize only those source files, that are located under these directories.	ages.
S Gradle		Project format: idea (directory based) V		C:\Users\nkg75\S C:\Users\nkg75\S C:\Users\nkg75\S C:\Users\nkg75\S C:\Users\nkg75\S	tudioProject\credo-detector-android\app\src\androidTest\java tudioProject\credo-detector-android\app\src\main tudioProjectscd-detector-android\app\src\test\java tudioProjects\credo-detector-android\app\src\test\java	Java Android Java Java
	Previous Next Cancel Help	Previ	ious Next Cancel Help		Previous Next Cancel	Help
🛎 Import Project	×	import Project	×	🛎 Import Project		×
Please review libraries found. At this stage you can se exclude particular libraries from the project, or move	et library names that will be used in the project, individual files between the libraries.	Please review suggested module structure for the project. A exclude particular modules from the project, merge or split All dependencies between the modules as well as depende	At this stage you can set module names, individual modules. ncies on the libraries will be automatically updated.	Please select project SD This SDK will be used by + -	K. y default by all project modules.	
P Alle Ale		1 Mic Ale		1.8	Name: 1.8	
Libraries	Library contents	Modular	Andula dependencies	👾 Android API 28 Plat	JDK home path: C:\Program Files\Android\Android Studio\jre	
☑ IIII gradle-wrapper (C:\Users\nkg75\StudioProjec	ts\c 📗 gradle-wrapper.jar (C:\Users\nkg75\StudioProjects\cred	Imadules Imadules Imadules Imadules Imadules			Classpath Sourcepath Annotations Documentation Paths	
		Imain (C:\Users\nkg75\StudioProjects\credo-dete Ima test (C:\Users\nkg75\StudioProjects\credo-detect Ima test (C:\Users\nkg75\StudioProjects\credo-detect	Nothing to show		C\Program Files\Android\Android Studio\jre\jre\lib\charset.sjar C\Program Files\Android\Android Studio\jre\jre\lib\jre.sjar C\Program Files\Android\Android Studio\jre\jre\lib\jre.sjar C\Program Files\Android\Android Studio\jre\jre\lib\Jre\Jib\resource.jar C\Program Fil	64jar +
	Previous Next Cancel Help	Previ	ious Next Cancel Help		Previous Next Cancel	Help

Download dependency by Gradle builder

Prepare smartphone to working with Android Studio

For ADB to recognize your device as a target for deploying debuggable APKs, you must first enable USB debugging in the on-device developer options.

Depending on the version of Android you're using, proceed as follows:

- On Android 8.0 and higher, go to Settings > System > About phone and tap Build number seven times.
- On Android 4.2 through 7.1.2, go to Settings > About phone and tap Build number seven times.

Return to the main **Settings** menu to find **Developer options** at the bottom. In the Developer options menu, scroll down and enable **USB debugging**.

Prepare smartphone: screen shots

Settings

Date & time

Languages & input

Backup & reset

{ } Developer options

System updates About phone

G Google

0

æ

0

Advanced

Ŧ

()

i K/s • 🕩 💌 🗖 🗖 🖉 🔰 🔍 11:44	🛥 🤶 Developer optic
	On
	Get logs
	Take bug report
ummer Time	Desktop backup passw Desktop full backups aren't current
sh (Poland)	Stay awake Screen will never sleep while charge
	Enable Bluetooth HCI s Capture all bluetooth HCI packets in
	OEM unlocking Allow the bootloader to be unlocked
	Running services
	WebView implementat
	Advanced reboot

S A3010_28_180915	
57.4 K/s 🕕 🖌	0 11:45
Developer options	
gs	
bug report	
op backup password full backups aren't currently protected	
ill never sleep while charging	
e Bluetooth HCI snoop log	
unlocking	
bootloader to be unlocked	
ng services	
I control currently running services	
iew implementation	
nced reboot	
locked, repoor item will bring you a dialog to chose to	

0.00 K/s 🕕 💌 🖌 🗘 11:43

	0.00 K/s 🕕 💌 🖌 🗘 11:42
\leftarrow Phone status	
Model ONEPLUS A3010	
OxygenOS version	
RAM 6GB	
Storage 12868	
Android version	

Android security patch level September 1, 2018

Baseband version MPSS.TH.2.0.c1.9-00102-M8996FAAAANAZM-1.99649.1.118107.1

```
Kernel version

Sales

OneFl

Sales

a developer.
```

Build number ONEPLUS A3010_28_180915

Sat Sep 15 02:06. You are now a develop Build number

Run on smartphone

Click on menu $\mathbf{Run} \rightarrow \mathbf{Run}$ 'app' and check your smartphone from list:

Troubleshooting

If you have previous installation from Google Play, you must uninstall it. Google Play apk is signed by CREDO Team key. Your apk will be signed by debug key generated during Android Studio installation.

🛎 App	Dication Installation Failed X
?	Installation failed with message INSTALL_FAILED_UPDATE_INCOMPATIBLE: Package science.credo.mobiledetector signatures do not match the previously installed version; ignoring!. It is possible that this issue is resolved by uninstalling an existing version of the apk if it is present, and then re-installing.
	WARNING: Uninstalling will remove the application data!
	Do you want to uninstall the existing application?
	OK Cancel

Build APK

If you want build APK for share please clicks on menu: $Build \rightarrow Build bundles(s) / APK(s) \rightarrow Build APK(s)$

The APK file will be stored in: ...\app\build\outputs\apk\debug

Important parts of source code

.../science/credo/mobiledetector/detection/CameraPreviewCallbackNative.kt

Contains on Preview Frame method: analyse image from camera:

- 1. Save timestamp and run in async mode:
 - a. Make histogram of frame
 - b. If frame is darkness that **average factor** and black pixels is more than **black count** then go to find hits:
 - i. If brightest pixel is brighter than max factor, cut image with margin and send to server
 - ii. Fill cuted area by 0 bright pixel
 - iii. Do i. point again

.../science/credo/mobiledetector/DetectorService.kt

Setup camera and turn on.

User interface localisation

```
.../res/values/strings.xml, .../res/values-pl/strings.xml,
.../res/values-{lang}/strings.xml etc.
```

Interface translation. {lang} is the 2-letters language suffix. Android supports more specialized {lang} suffix i.e. "en-rGB".

If you want make translation please create .../res/values-{lang}/ directory and copy string.xml from ...res/values/strings.xml. Now please change all messages like:

```
<string name="button_go_to_experiment">Go to experiment</ string>
```

To:

<string name="button_go_to_experiment">Uruchom eksperyment!</ string>

Please test your localisation before sent to authors. Some messages may be too long and may be cut on interface. But you can fix the layout issue and send fixed whole project :)

Contribute in GitHub

Sending fixed source code to authors via e-mail is confusing. Best way is:

- 1. **Create** your GitHub account
- 2. Go to Fork project on your account
- 3. **Clone** project from your fork to Android Studio, make changes and **push** to GitHub
- 4. Make pull request on GitHub website to authors

Commit and push changes to GitHub repository

🛎 credo-detector-android [C:\Users\nkg75\StudioProjects\credo-detector-android] - ...\app\src\main\res\values-pl\strings.xml [app] - Android Studio

<u>File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help</u>

credo-detector-android > is app > is src > is main > is res > is values-pl > is src	rings.xml 〉		🔨 🔚 app 🗸 🛛	▶ ┼ 咻 峠 ^ ⊑ ■ ♥ ♥ 馏 ๖ ◙ ⊑ 🛓 ⊑ ♀ !
명 🖷 Android 👻 😳 崇 🕸 🕅	StatsManager.kt >	🗧 🧟 DetectionStats.kt 🛛 🧟 CameraSurfaceHolder.kt 🗶 🧟 DetectorService.kt 🖉 🍰 values\strings.xml 🗶 🍰 pl\strings.xml ×	*≣5	Assistant ∰ - →I
	Edit translations	for all locales in the translations editor. Open e	ditor Hide notification	Troubleshoot device connection issues.
Image: Constraint of the constraint	Q.* ekspe 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 90 91 92 93 94 95 96 97 98 99 90 1001 102 103 104	Commit Changes Commit Changes Commit Changes Commit Changes Commit Changes Commit Message Commit	<pre>< × ×</pre>	Troubleshoot device connection issues. This guide helps you troubleshoot issues connecting and running your app on a physical device. View the device setup instructions in a browser. (2) Enable USB debugging For ADB to recognize your device as a target for deploying debuggable APKs, you must first enable USB debugging in the on-device developer options. Depending on the version of Android you're using, proceed as follows: • On Android 8.0 and higher, go to Settings > System > About phone and tap Build number seven times. • On Android 4.2 through 7.1.2, go to Settings > About phone and tap Build number seven times. Return to the main Settings menu to find Developer options at the bottom. In the Developer options menu, scroll down and enable USB debugging.
strings.xml (hu) strings.xml (h) strings.xml (p) strings.xml (pt-rBR)	105 106 107 108 109	► Diff	szy niż max factor	
Version Control: Local Changes: Log Console × Version Control: Log E Log Console × Version Control: Version Control: Version Control: Version Control:	napp\src\main\res	Zatrzymany ponieważ telefon je 66 2atrzymany ponieważ telefon jeś (/string) 7 67 67 68 68 (/string) 68 (/string)	or the device you are of sing platform.	reploying to is installed.
1 file committed: Comment of changes (moments and)	ar			90-64 CRLE: LITE-8 Git experiments : Context < no context > %
The comment of changes (moments ago)	School agenda	Prez 👩 Comparing credo-sci 👩 Localize your ann LA 🚿 credo-detector-andro 🗮 Kalkulator 🧖 Be	z tytułu – Paint	

Making push request to authors

Some changes	✓ app 1 file C:\Users\nkg75\St ✓ src\main\res\values-pl 1
ush Iags: All	

🙀 Download Android Stud 🗙	🗘 dzwiedziu-nkg/credo-de 🗙 📫 D	ownload Android Studi 🗙 🛛 🙆 cd.	- Tłumaczenie po ang 🗙 📃 🚽	+ _	×
- → C 🔒 GitHub, Inc Aplikacje ★ Bookmarks 🕅	[US] https://github.com/dzwiedziu GeoKrety Logger - ni 🛛 🛞 GeoKrety Lo	i-nkg/credo-detector-android gger - p: 🌓 bliw 💋 Gravity Sir	🖈 🖪 🔯 () : akładł
Search or jump to	7 Pull reques	sts Issues Marketplace Expl	ore	+ -	7 0 -
⁷ dzwiedziu-nkg / credo forked from credo-science/credo-det	-detector-android		O Unwatch ▼ 1	★ Star 0 ¥ Fork	1
↔ Code រឿ Pull requests	0 III Projects 0 💷 Wiki	且 Insights 🛛 🛱 Settings			
REDO detector as Android	application				Edit
lanage topics					
Nanage topics	پو 23 branches	🛇 0 releases	1 5 contributors	ಶ್ರೇ MIT	
Aanage topics (7) 148 commits Branch: master New pull rec	₽ 23 branches	© 0 releases	1 5 contributors new file Upload files	कु MIT d file	ıd▼
Anage topics This branch: master	پ 23 branches uest science:master.	© 0 releases	1 5 contributors	쇼 MIT d file Clone or downloa) Pull request 을 Comp	a d - Dare
fanage topics 148 commits Branch: master • New pull rec This branch is even with credo- add dzwiedziu-nkg Update librarie	الله 23 branches السعة science:master. s and Build Tools	© 0 releases	22 5 contributors new file Upload files Fin I Late	호 MIT d file Clone or downlos ?) Pull request (함) Comp st commit 361bca1 2 days	a d ▼ ⊃are ago
Aanage topics ① 148 commits Branch: master ▼ New pull rec This branch is even with credo- Market dzwiedziu-nkg Update librarie The app	یک 23 branches uest science:master. s and Build Tools Update libraries and Build Too	© 0 releases	L 5 contributors	MIT d file Clone or downloa), Pull request 은 Comp st commit 361bca1 2 days 2 days	ad - Dare ago ago
Anage topics This branch: master Azwiedziu-nkg Update librarie app doc	ŷ 23 branches uest science:master. s and Build Tools Update libraries and Build Too Finish description of ping ang	♥ 0 releases Create ols g detection frame	Image: Second ributors New file Upload files Fin Image: Second ributors Image: Second ributor ributors Image: Second ributor ributor ributors Image: Second ributor ributori ributor ributor ributor ributor ributor rib	ي MIT d file Clone or downloa Pull request الله Comp st commit 361bca1 2 days 2 days 3 months	ad ▼ Dare ago ago
Aanage topics This branch: master New pull rec This branch is even with credo- dawiedziu-nkg Update librarie app doc gradle/wrapper	Y 23 branches Y 23 branches Science:master. S and Build Tools Update libraries and Build Tool Finish description of ping ang Update do Android Studio 3.3	♥ 0 releases Create ols g detection frame 2 and target API to 28	Image: Source of the second	호 MIT d file Clone or downloa ? Pull request ② Comp st commit 361bca1 2 days 2 days 3 months 2 days	ad ▼ Dare ago ago ago
Aanage topics T148 commits Branch: master New pull rec This branch is even with credo- duited librarie app doc gradle/wrapper J. gitignore		♥ 0 releases Create Create ols g detection frame 2 and target API to 28	12 5 contributors new file Upload files I I I I	ی MIT d file Clone or downloo Pull request اک Comp st commit 361bca1 2 days 2 days 3 months 2 days 6 months	ad 🕶 Dare ago ago ago ago
Anage topics This branch is even with credo- dzwiedziu-nkg Update librarie doc gradle/wrapper Jucense	P 23 branches uest science:master. s and Build Tools Update libraries and Build Tool Update do Android Studio 3.4 Finish description of ping ang Update do Android Studio 3.4 First code publication Change license to MIT	♥ 0 releases	S contributors new file Upload files Fin I I I I I I	호 MIT d file Clone or downlos ?) Pull request 한 Comp st commit 361bce1 2 days 2 days 3 months 2 days 6 months 6 months	ad 🔻 Dare ago ago ago ago ago
Aanage topics This branch is even with credo- a dzwiedziu-nkg Update librarie app doc gradle/wrapper gradle/wrapper J. gitignore LICENSE README.md		♥ 0 releases Create ols g detection frame 2 and target API to 28	Image: Source of the second	호 MIT d file Clone or downlow ? Pull request 은 Comp st commit 361bca1 2 days 2 days 3 months 2 days 6 months 6 months 5 months	ad T

Sending push request to authors

How we see your push request?

Thanks for attention and welcome to contribution!