

The Green Lab

Lab1 - AndroidRunner & ExperimentRunner

Radu Apsan



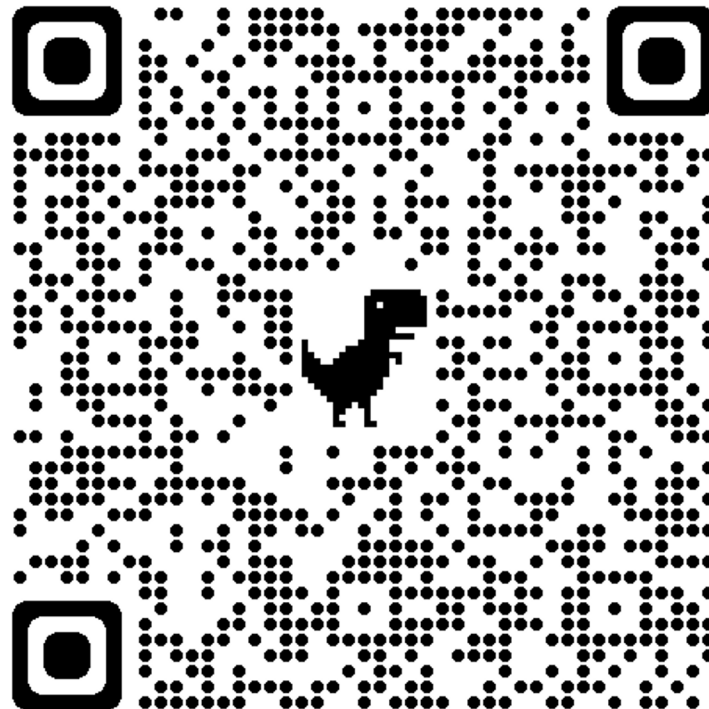
VRIJE
UNIVERSITEIT
AMSTERDAM

LOOKING FURTHER

FOR LAPTOP EXPERIMENT TEAMS

We need to know your CPU specs

<https://forms.gle/CMrUgohxqkKPSHi16>



Hello, who am I?

- I'm Radu
- 2nd year MSc Computer Science
- been working with Ivano for the past 10 months on AndroidRunner

So, why am I here?

- Help with understanding and using AndroidRunner and ExperimentRunner
- Tech support if the experiment software is not working as expected
- Tell you to read the README.md

How to contact me?

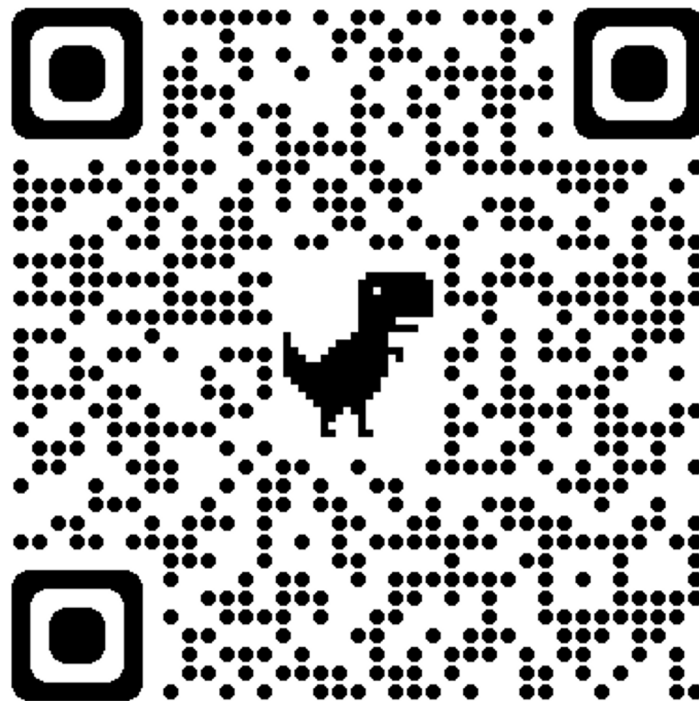
Ranked from most to least preferred:

1. Email (preferably): r.apsan@student.vu.nl
1. Ask in class (I'll do my best to be there for all the classes)
1. Canvas message

Follow along

Everything you see here is **available on GitHub**

<https://github.com/Raiduy/GreenLab-Lab1>



What's the plan?

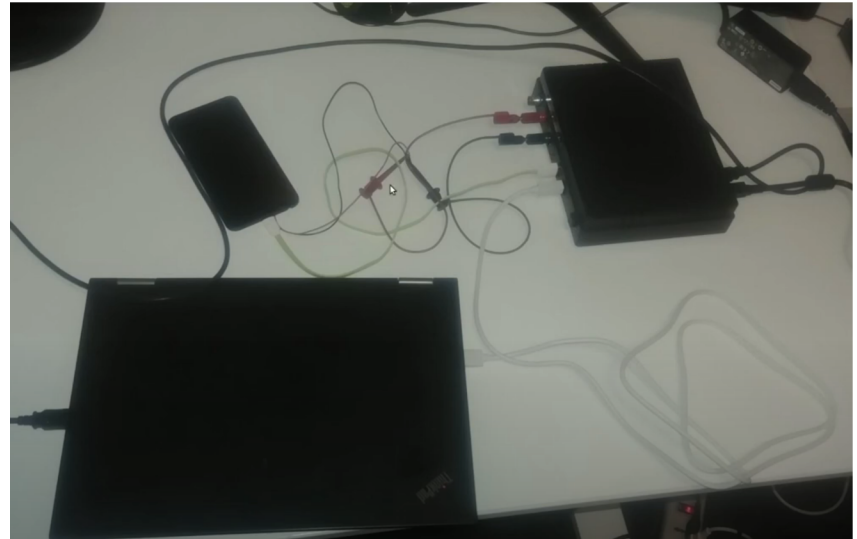
- Introduction
- Tools for experimenting
- Android Debug Bridge Demo
- AndroidRunner
- AndroidRunner demo
- ExperimentRunner
- ExperimentRunner demo
- **EXPERIMENT PACKS!!!**

Why test (mobile) apps?

- Increase energy awareness
- Improve the usability of the device
- Understand the key factors of an inefficient application

Testing on real devices:

- more accurate than simulators
- actual real-world



How do we test (mobile) apps?

Power:Joular

Profilers:

- [AndroidRunner](#):
 - Monsoon, [Batterymanager](#)
- [ExperimentRunner](#):
 - [PowerJoular](#)

What is ADB and how do we use it?



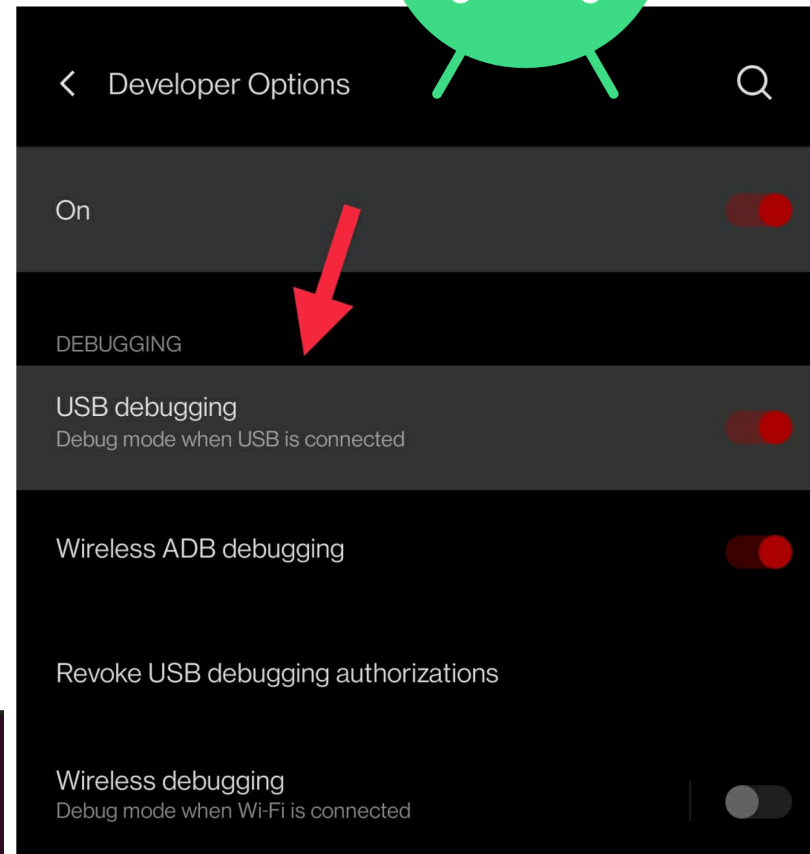
ADB (Android Debug Bridge)

- allows the user to control and interact with Android device from terminal
- supports functions such as:
 - listing apps
 - installing app
 - running app
 - uninstalling app
 - tracking logs
 - pulling files
 - pushing files
 - shell interaction

ADB in action

- [Enable Developer Options](#)
- Enable USB debugging in Developer Options
- Plug in the device
- `adb devices` to start the adb server
- [useful commands list](#)

```
radu@radu-OMEN:~$ adb devices
* daemon not running; starting now at tcp:5037
* daemon started successfully
List of devices attached
73c851e9      device
```



AndroidRunner



- <https://github.com/S2-group/android-runner>
- Experiment orchestrator that interacts with the connected device
- Uses adb heavily (good idea to get comfortable with it)
- Supports several types of profilers including Monsoon
- Supports phone interaction via MonkeyRunner ([how to use video](#))

BatteryManager profiler

- records information regarding battery consumption
- uses the [BatteryManager class in the Android API](#)
- [companion app](#)

AndroidRunner



THROUGH THE CODE



DEMO TIME
([before experiment checklist](#))

ExperimentRunner



- <https://github.com/S2-group/experiment-runner>
- Experiment orchestrator that allows for testing a PC
- Uses Python for experiment setups/runs
- Only supports certain types of CPUs (reason for the form)
- records energy and load information using [Intel RAPL](#)



THROUGH THE CODE



DEMO TIME

Experiment*

The earlier you start, the sooner we'll be able to help you

Your Turn



Now try it yourselves!
(raise your hand if you run into trouble)