

# Getting started with Android TV



lukasz\_adamczak



<http://czak.pl>

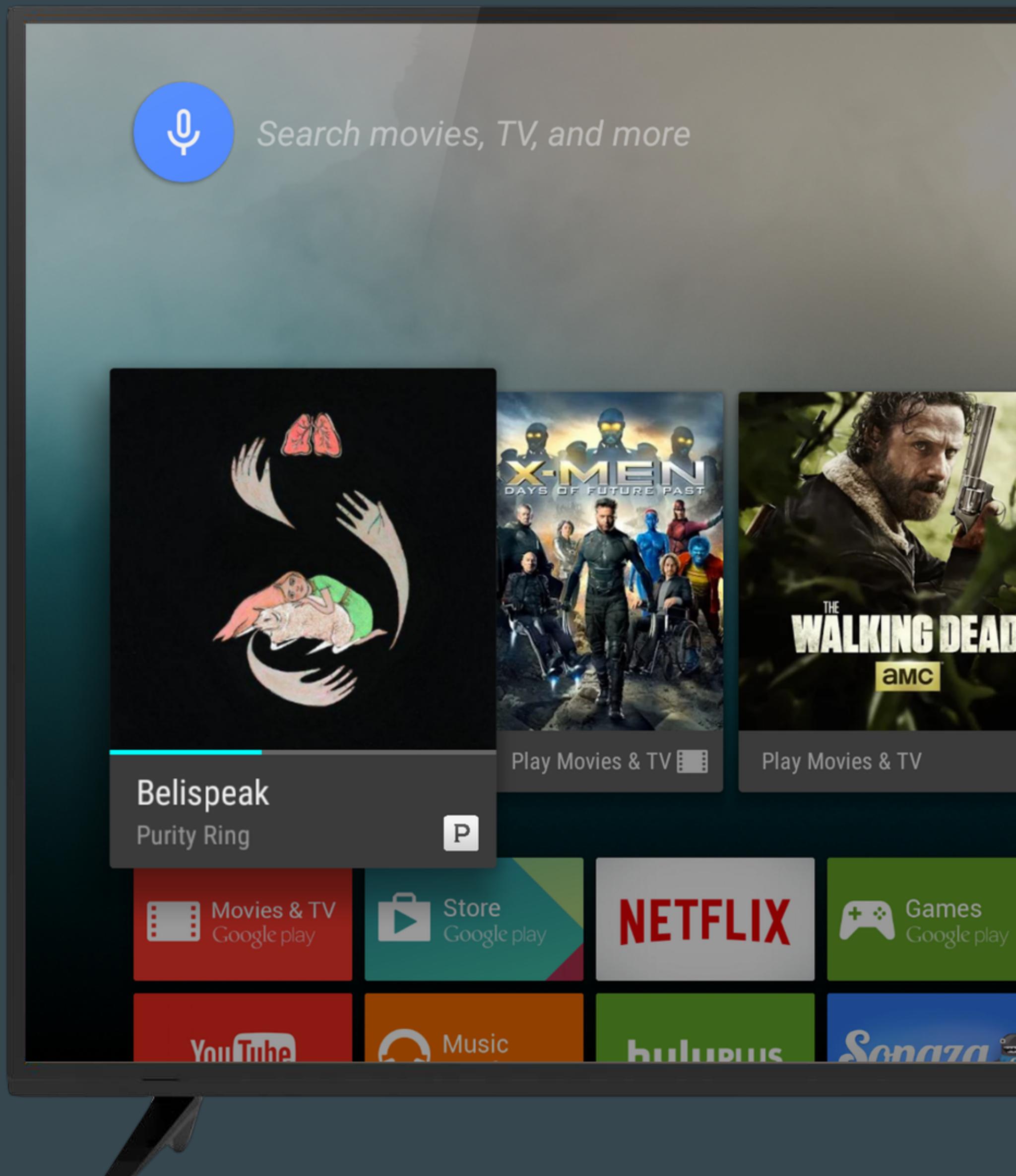


You?

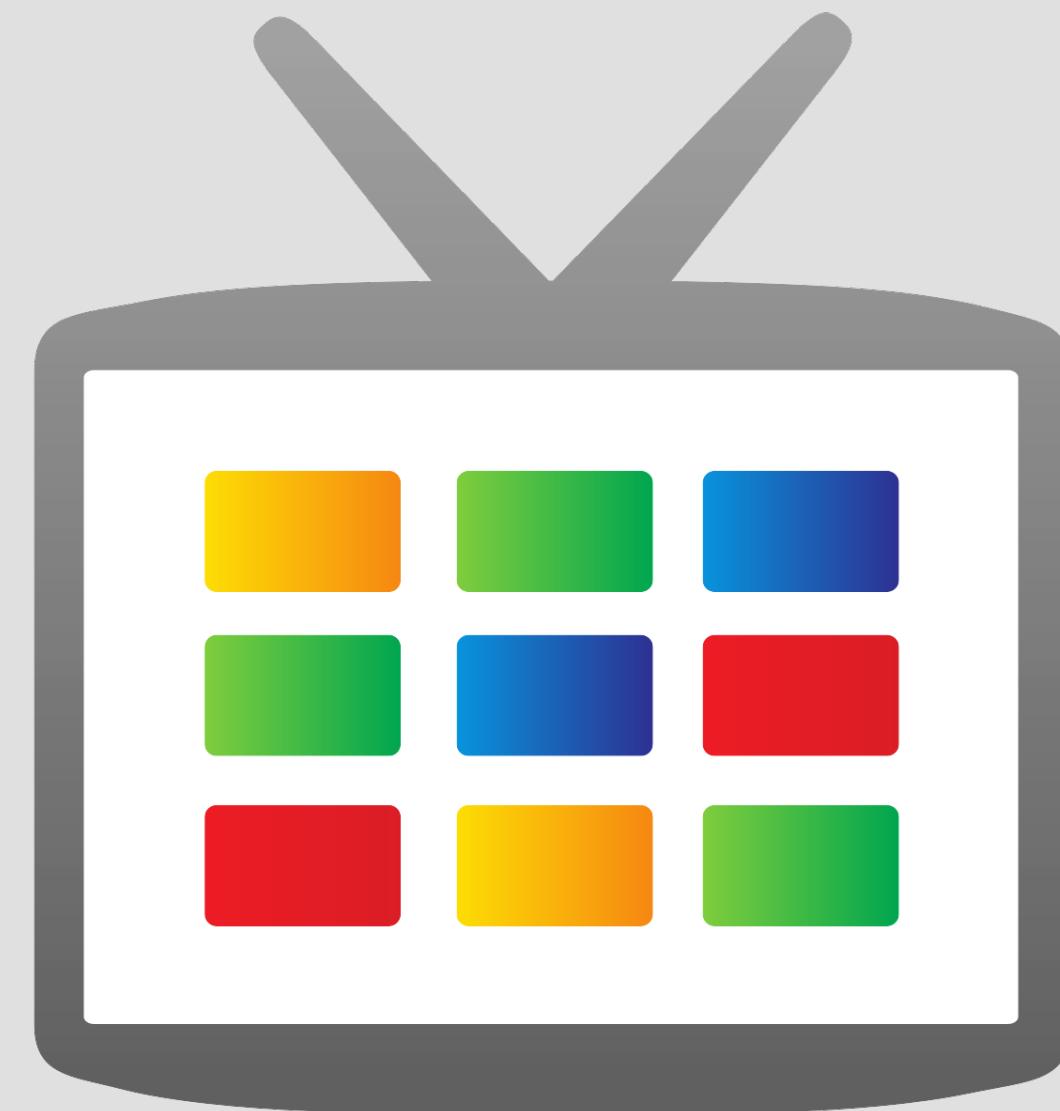
1. What is Android TV?
2. How do I develop for it?

# What is Android TV?

- Smart TV platform from Google
- Introduced in 2014 with 5.0 Lollipop
- Leanback UI
- Play Store for TV
- Google Cast built in







# Google TV™

## Google TV

*Not to be confused with [Android TV](#).*

**Google TV** was a smart TV platform from [Google](#) co-developed by [Intel](#), [Sony](#), and [Logitech](#) that was launched in October 2010<sup>[1]</sup> with official devices initially made by Sony and Logitech.<sup>[2]</sup> Google TV integrates the [Android](#) operating system and the [Google Chrome](#) web browser to create an [interactive television overlay](#) on top of existing online video sites to add a [10-foot user interface](#), for a smart TV experience.

Google TV's first generation devices were all based on [x86 architecture](#) processors by Intel and were created and commercialized by [Sony](#) and [Logitech](#). The second generation of devices are all based on [ARM architecture](#) processors and with additional partners including [LG](#), [Samsung](#), [Vizio](#), and [Hisense](#). In 2013

**SONY**

**PHILIPS**

**SHARP**



**NOW**

**E**



“Talk is cheap. Show me the code.”

- ~~1. What is Android TV?~~
2. How do I develop for it?
  - Leanback library
  - ...and how do I use it?
  - TV-specific considerations

android.support.v17.leanback



# YouTube

Home

Subscriptions

Uploads

Playlists

History

Watch Later

Purchases

Subscriptions

Google

Recommended



Start Getting Used To Saying President Tr...  
The Late Show with Stephen Colbert

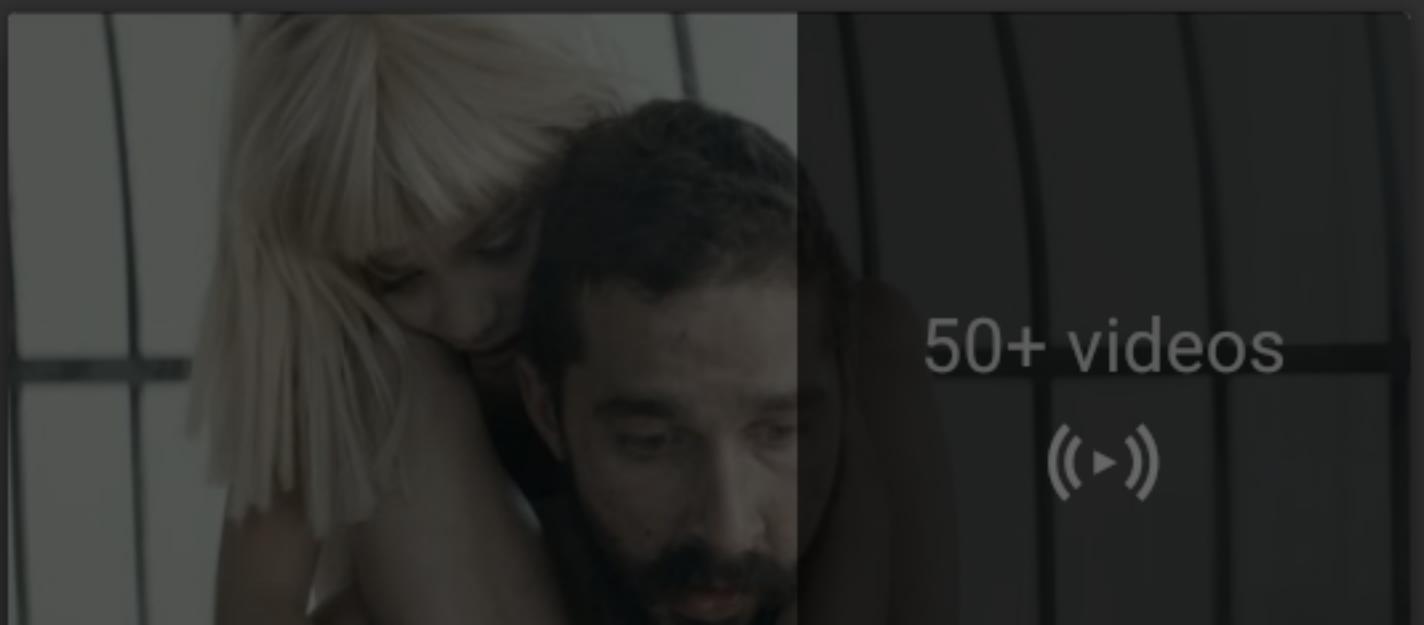


Donald Trump Has A Point, Incredibly  
The Late Show with Stephen Colbert

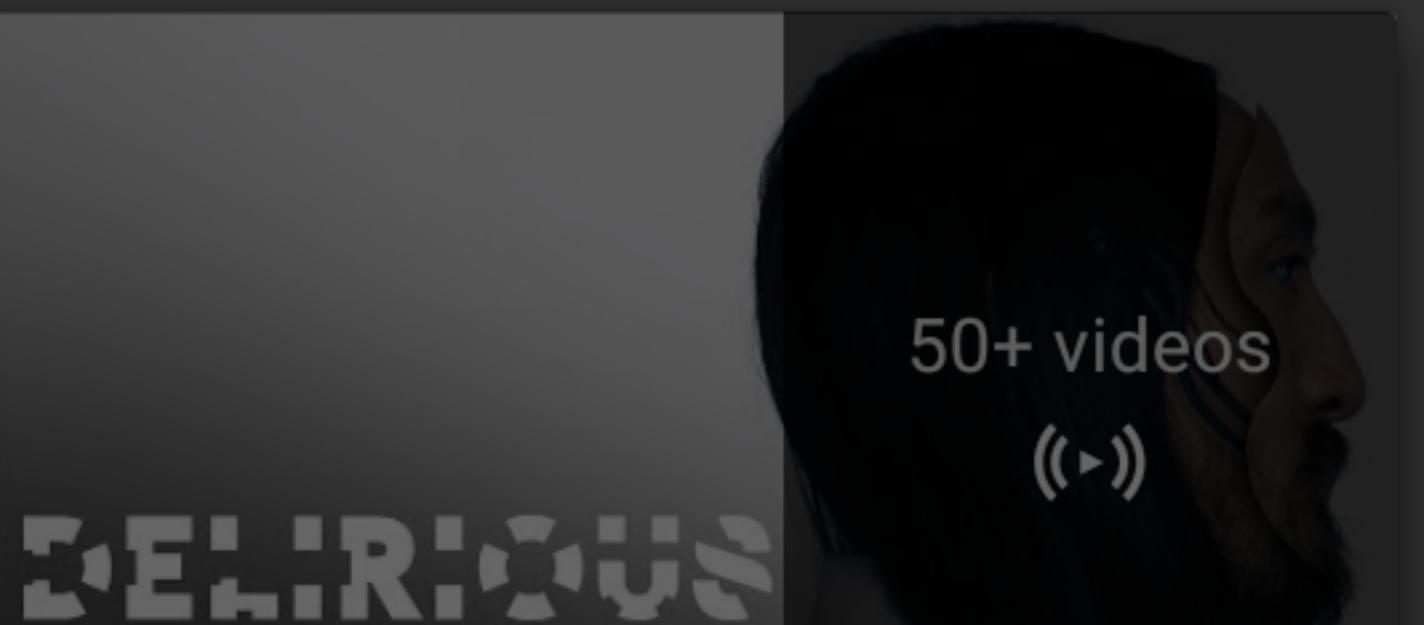


Jennifer Lawrence  
The Tonight Show St...

YouTube Mixes

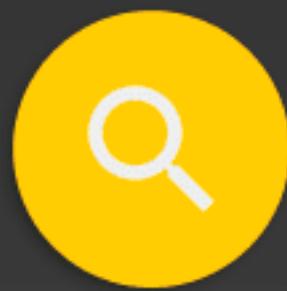


50+ videos  
()



50+ videos  
()





# KITCHEN STOREIES

## Recipes



Rhubarb meringue  
cake



Chia fresca



Tarte tatin

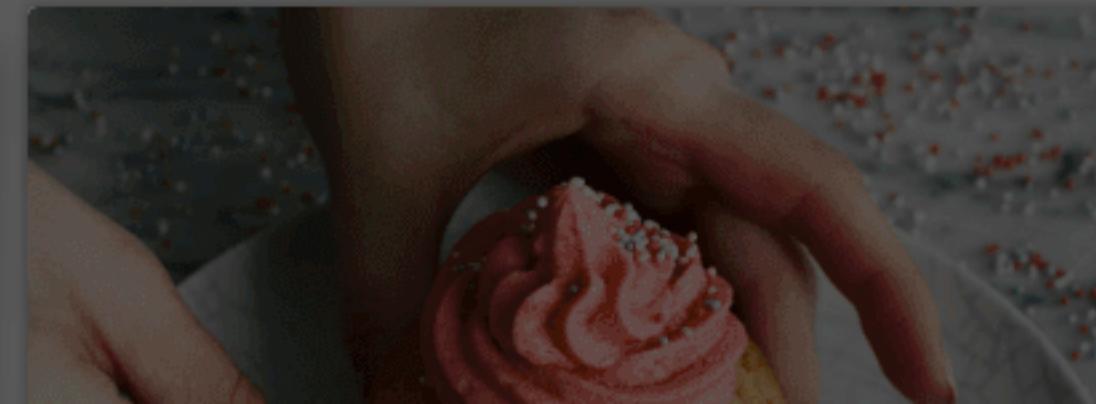


Braised pork belly



Fish g

## Quick bites



# Pizzeria



Margherita

32zł



Pepperoni

35zł



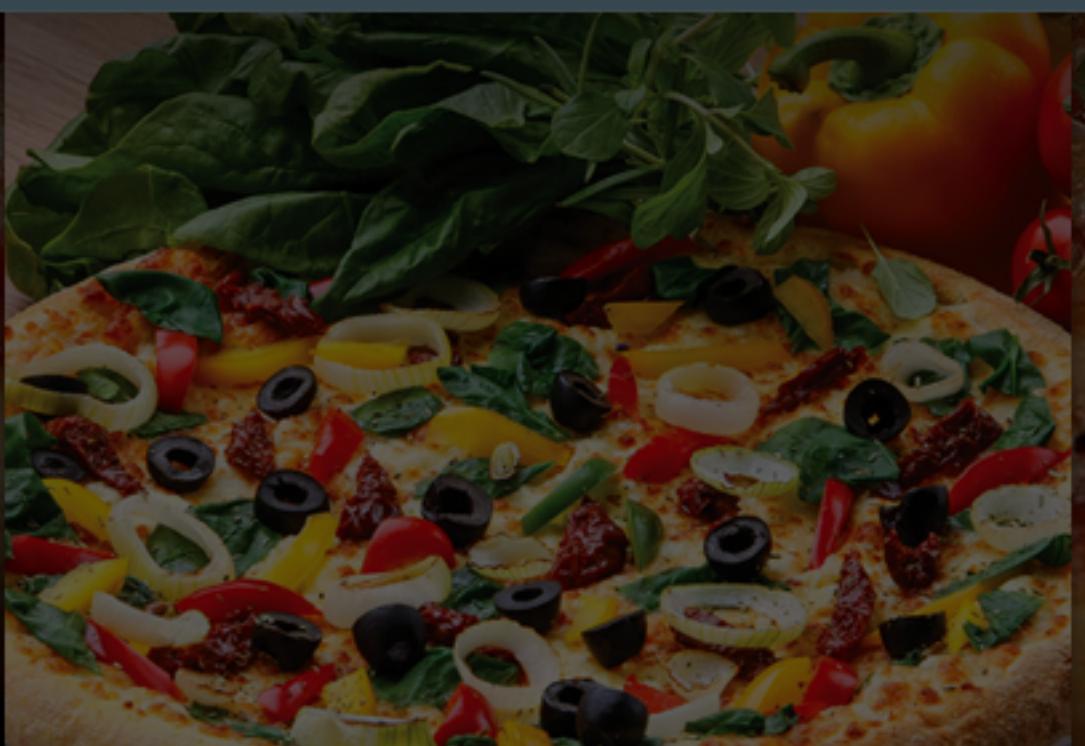
Cztery sery

38zł



Italian Meatballs

41zł



Pronkotska



Texas

# `android.support.v17.leanback`

Support classes for building "leanback" user experiences

android.support.v17.leanback

- android.support.v17.leanback.widget
- android.support.v17.leanback.app

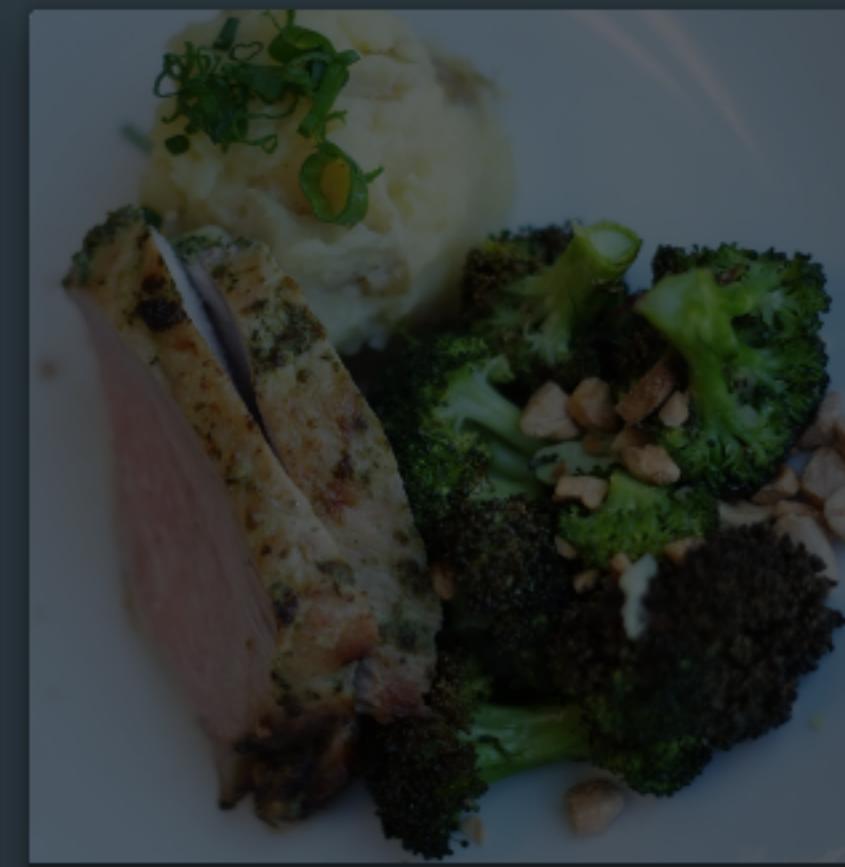
# VerticalGridFragment



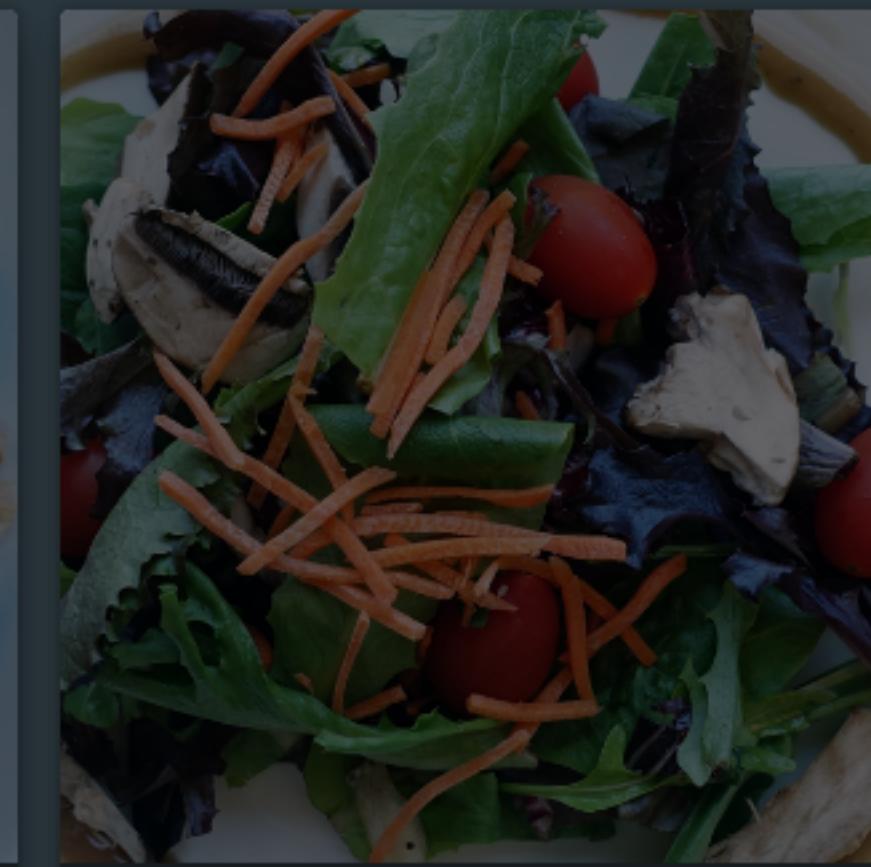
Nüsse  
\$3.99/lb



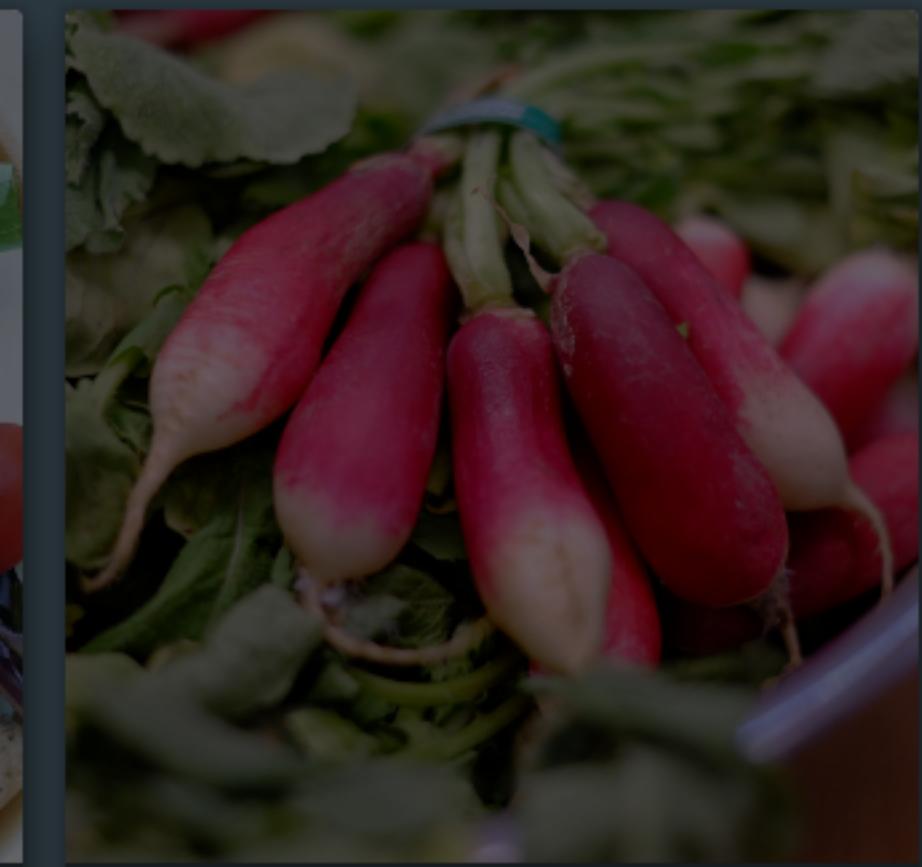
Undefinierbar  
\$3.99/lb



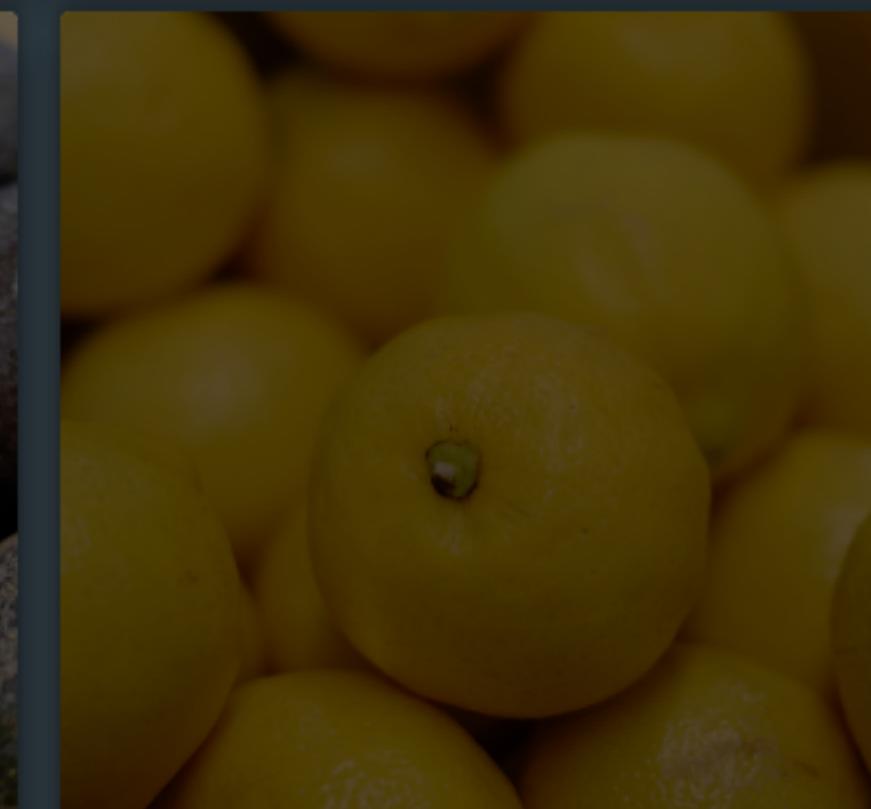
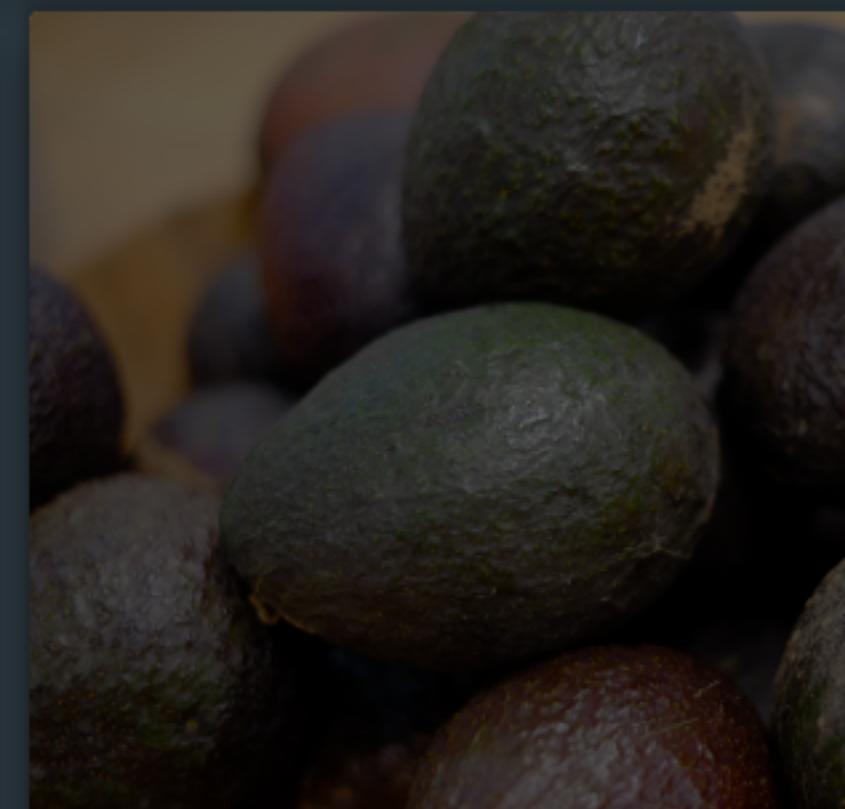
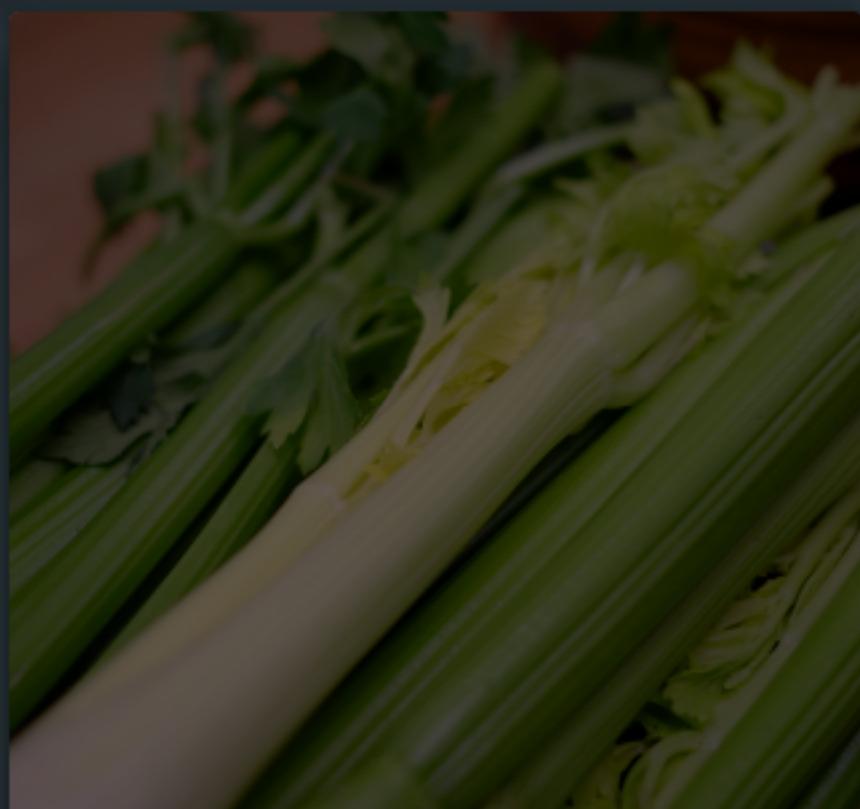
Brocoli  
\$3.99/lb



Salat  
\$3.99/lb



Große Radischen  
\$3.99/lb



# RowsFragment

## Vegetables



Salat  
\$3.99/lb



Radish  
\$3.99/lb



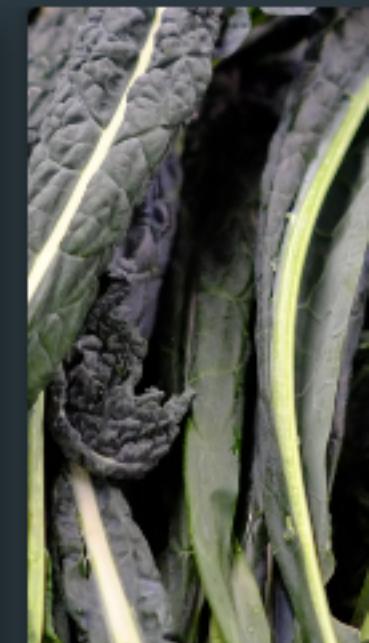
Red onion  
\$3.99/lb



Celery  
\$3.99/lb

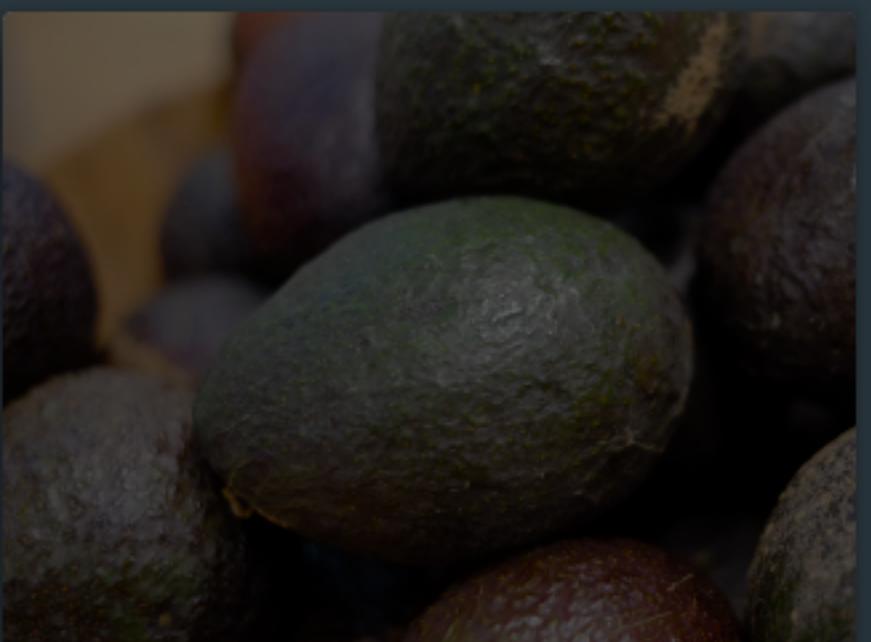


White vegetable  
\$3.99/lb

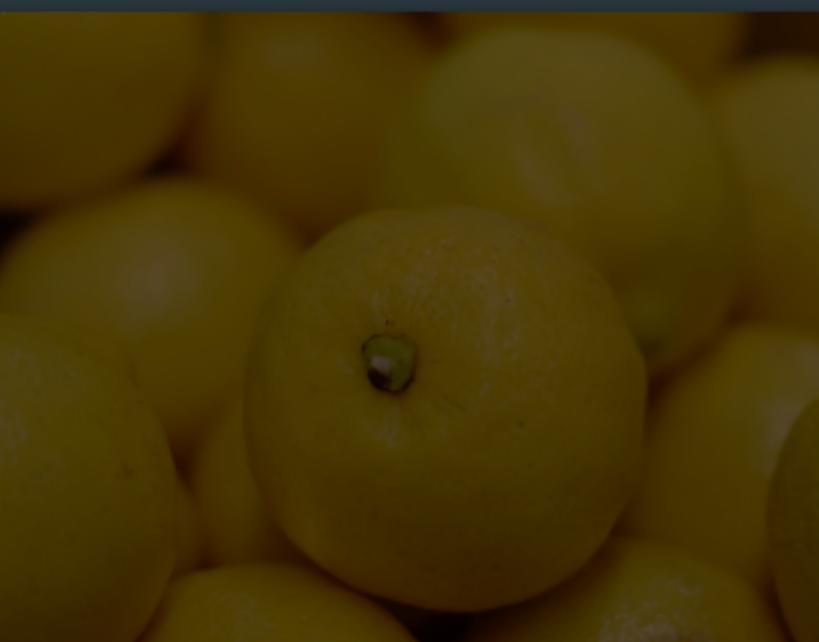


Cabbage?  
\$3.99/lb

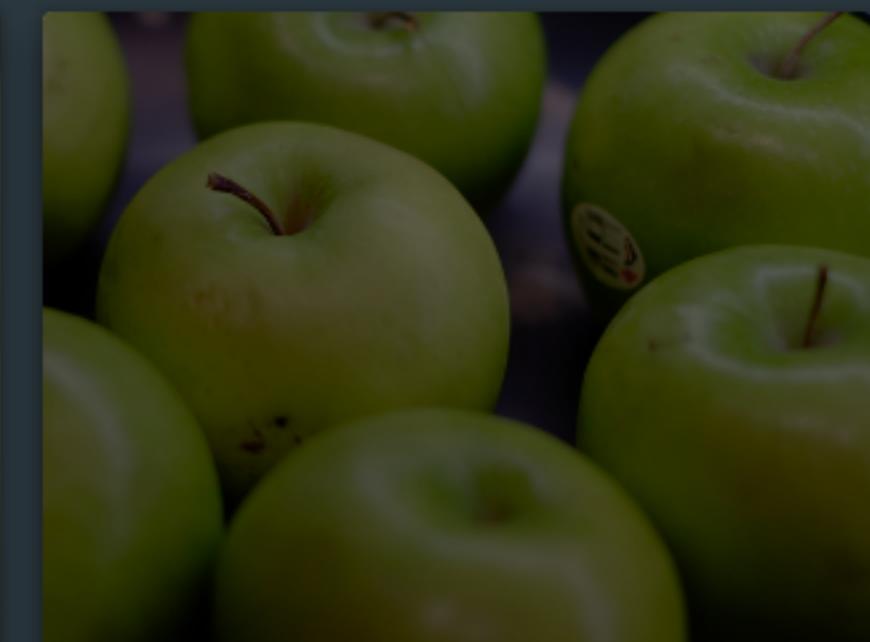
## Fruit



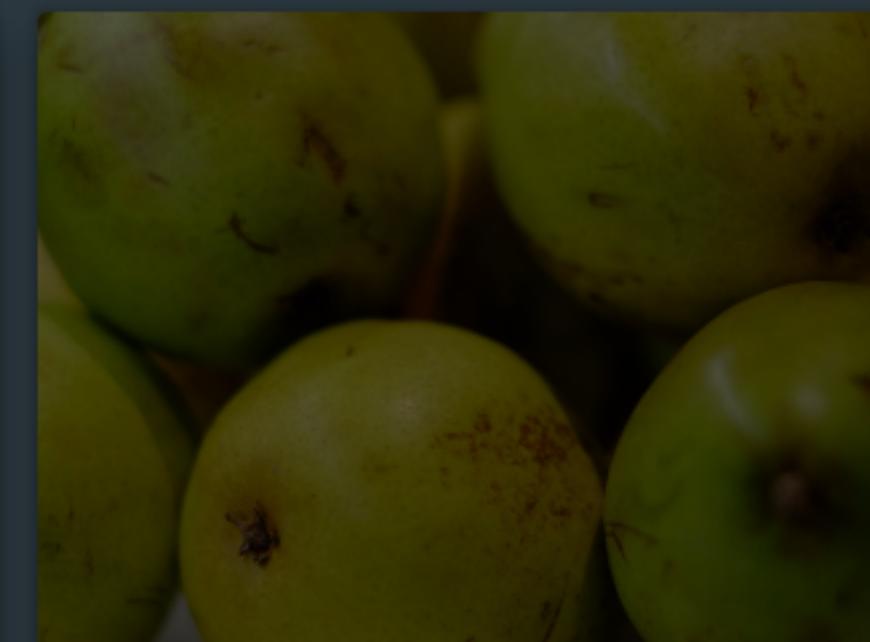
Exotic somethings



Lemons



Apples



More Apples



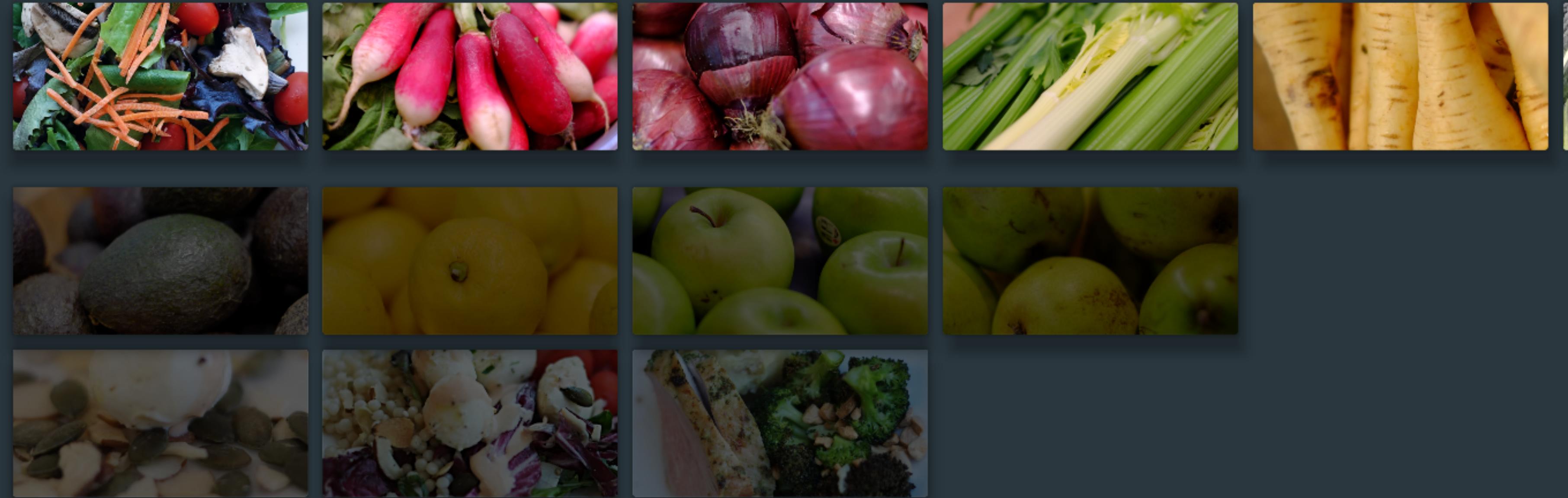
# BrowseFragment

Menu

Vegetables

Fruit

Meat



# DetailsFragment



BUY \$9.99

ADD TO WISHLIST

RELATED

## A Summer in a Canyon

Kate Douglas Smith Wiggin 1914

It was nine o'clock one sunny California morning, and Geoffrey Strong stood under the live-oak trees in Las Flores Cañon, with a pot of black paint in one hand and a huge brush in the other. He could have handled these implements to better purpose and with better grace had not his arms been firmly held by three laughing girls, who pulled not wisely, but too well. He was further incommoded by the presence of a small urchin who lay on the dusty ground beneath his feet, fastening an upward clutch on the legs of his trousers.

# GuidedStepFragment

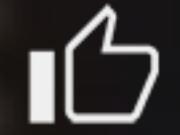
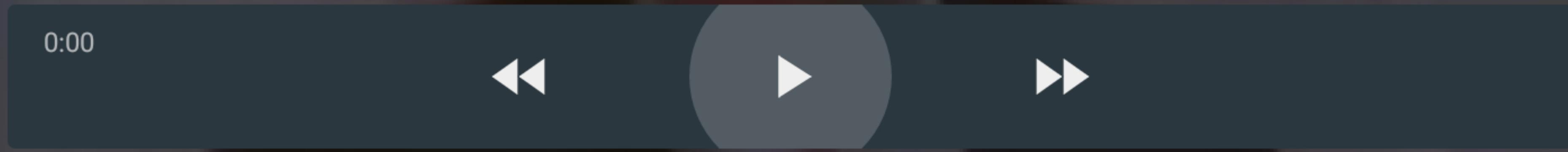
Used to prompt for user input and create wizards.

Awsum

Sux

# PlaybackOverlayFragment

Definitely not Rick Astley



“Talk is cheap. Show me the code.”

1. ~~What is Android TV?~~
2. How do I develop for it?
  - ~~Leanback library~~
  - ...and how do I use it?
  - TV-specific considerations

# Using leanback fragments

Model-View-Presenter

# Using leanback fragments

```
class Pizza {  
    String photo;  
    String name;  
    int price;  
}
```

# Pizzeria



Margherita

32zł



Pepperoni

35zł



Cztery sery

38zł



Italian Meatballs

41zł



Pronkotska



Texas

# Using leanback fragments

1. Subclass fragment
2. Place in layout
3. Fill with data
4. Implement Presenter
5. Customize via styles

# 1. Subclass fragment

```
package pl.czak.pizzeria;  
  
class PizzaGridFragment  
    extends VerticalGridFragment {  
}  
}
```

## 2. Place in layout

```
<FrameLayout>

    <fragment
        android:id="@+id/pizza_grid_fragment"
        android:name="pl.czak.pizzeria.PizzaGridFragment"
        android:layout_width="match_parent"
        android:layout_height="match_parent" />

</FrameLayout>
```

### 3. Fill with data

```
ArrayObjectAdapter adapter =  
    new ArrayObjectAdapter(new PizzaCardPresenter());  
  
adapter.add(new Pizza("Margherita", 30, "margherita.jpg"));  
adapter.add(new Pizza("Pepperoni", 35, "pepperoni.jpg"));  
  
setAdapter(adapter);
```

# 4. Implement presenter

```
class Pizza {  
    String photo;  
    String name;  
    int price;  
}
```



Margherita  
32zł

ImageCardView

# 4. Implement presenter

```
package android.support.v17.leanback.widget;

public abstract class Presenter {
    ...

    public abstract ViewHolder onCreateViewHolder(ViewGroup parent);
    public abstract void onBindViewHolder(ViewHolder viewHolder, Object item);
    public abstract void onBindViewHolder(ViewHolder viewHolder);

    ...
}
```

# 4. Implement presenter

```
class PizzaCardPresenter extends Presenter {  
    /* ... */  
  
    @Override  
    public ViewHolder onCreateViewHolder(ViewGroup parent) {  
        View view = new ImageCardView(parent.getContext());  
        return new ViewHolder(view);  
    }  
  
    /* ... */  
}
```

# 4. Implement presenter

```
class PizzaCardPresenter extends Presenter {  
    @Override  
    public void onBindViewHolder(ViewHolder viewHolder, Object item) {  
        Pizza pizza = (Pizza) item;  
        ImageCardView view = (ImageCardView) viewHolder.view;  
  
        view.setTitleText(pizza.getName());  
        view.setMainImage(/*...*/);  
    }  
}
```

# 4. Implement presenter

```
class PizzaCardPresenter extends Presenter {  
  
    @Override  
    public void onUnbindViewHolder(ViewHolder viewHolder) {  
        // nothing to do here...  
    }  
  
}
```

# 5. Customize via styles

```
<style name="PizzaCardImage"
      parent="Widget.Leanback.ImageCardView.ImageStyle">
    <item name="android:layout_width">200dp</item>
    <item name="android:layout_height">200dp</item>
</style>

<style name="AppTheme" parent="@style/Theme.Leanback">
    <item name="imageCardViewImageStyle">@style/PizzaCardImage</item>
</style>
```

# Using leanback fragments

1. Subclass fragment
2. Place in layout
3. Fill with data
4. Implement Presenter
5. Customize via styles

MACIEK GÓRSKI,  
KASPER KONDZIELSKI  
Livecoding: family meeting (Swift talk)

```
public boolean equals(Object o) {  
    if (this == o) return true;  
    if (o instanceof Grandpa) {  
        Grandpa grandpa = (Grandpa) o;  
        return cache == grandpa.cache;  
    }  
    return false;  
}
```

Livecoding: family meeting  
Maciek Górski & Kasper

SZYMON KUCZUR  
Rrrrrr... MVVM and Reactive Programming

Rrrrrr... MVVM and Reactiv...  
Szymon Kuczur

REACTIVE PROGRAMMING  
Radek Pietruszewski  
Really Swifty APIs

Statically-Typed Swifty APIs  
Radek Pietruszewski

really Swifty?

Row

## Mobile Warsaw #34

Summary

- UITapGestureRecognizer
- Static Quick Actions



KAROL KOZUB 3D Touch



Beyond JSON

Maxim Zaks



## Mobile Warsaw #34

What is focusable?  
Imagine:  
• It's not possible  
• not all elements are focusable to YES

MACIEJ WITASZEK  
tvOS: don't touch the screen



KAMILA WOJCIECHOWSKA  
Cash Rich, Time Poor



Challanges

Row

Row



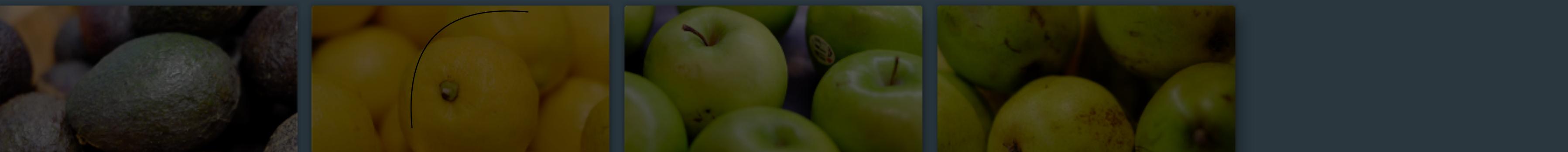
Menu

## Vegetables

Fruit

Meat

Row



# Diving with Sharks

A Googler

0:02



0:05



android.support.v17.leanback

<https://github.com/googlesamples/leanback-showcase>

1. ~~What is Android TV?~~
2. How do I develop for it?
  - ~~Leanback library~~
  - ~~...and how do I use it?~~
  - TV-specific considerations

# Declare a TV activity

```
<activity
    android:name="com.example.android.TvActivity"
    android:label="@string/app_name"
    android:theme="@style/Theme.Leanback">

    <intent-filter>
        <action android:name="android.intent.action.MAIN" />
        <category android:name="android.intent.category.LEANBACK_LAUNCHER" />
    </intent-filter>

</activity>
```

# Declare leanback support

```
<manifest>
    <uses-feature android:name="android.software.leanback"
                  android:required="false" />
    ...
</manifest>
```

# Touchscreen not required

```
<manifest>
    <uses-feature android:name="android.hardware.touchscreen"
                  android:required="false" />
    ...
</manifest>
```

# Provide a home screen banner



- 320 x 180 px, xhdpi resource
- Include text in image

# Overscan

- 5% margin for critical elements
- 48dp width  
27dp height

1. ~~What is Android TV?~~
2. ~~How do I develop for it?~~
  - ~~Leanback library~~
  - ~~...and how do I use it?~~
  - ~~TV specific considerations~~

# Homework

- Building for TV **without** leanback
- Recommendations
- Common APK vs Separate APKs

# Questions?